Mobility 2040

Invest in Your Transportation Future

CENTRAL MASSACHUSETTS METROPOLITAN PLANNING ORGANIZATION

2016 LONG RANGE TRANSPORTATION PLAN

PREPARED BY:

Staff of the Central Massachusetts Regional Planning Commission

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Central Massachusetts Regional Planning Commission

CMMPO
Central Massachusetts Metropolitan Planning Organization

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Endorsement of Mobility2040
2016 to 2040 Long Range Transportation Plan

The Central Massachusetts Metropolitan Planning Organization (CMMPO) hereby endorses Mobility2040: 2016 to 2040 Long Range Transportation Plan

✓ I concur
___ I do not concur
Stephanie Pollack, Secretary of Transportation, MassDOT — Date 7/22/15

✓ I concur
___ I do not concur
for Thomas Tinlin, Acting Administrator, MassDOT –H'way — Date 7-22-15

✓ I concur
___ I do not concur
for Howard Drobner, Chairperson, CMRPC — Date 7-22-15

✓ I concur
___ I do not concur
Stephen O'Neil, Chairperson, WRTA — Date 7.22.15

___ I concur
___ I do not concur
Edward M. Augustus, Jr., Worcester City Manager — Date _____

✓ I concur
___ I do not concur
Kathlyn Inman, Representative, North Subregion — Date 7.22.15

✓ I concur
___ I do not concur
Maurice DePalo, Representative, Northeast Subregion — Date 7.22.15

___ I concur
___ I do not concur
John Hebert, Representative, Southeast Subregion — Date _____

✓ I concur
___ I do not concur
Dennis Lamarche, Representative, Southwest Subregion — Date 7.22.2015

___ I concur
___ I do not concur
Vacant, Representative, West Subregion — Date _____

Central Massachusetts Metropolitan Planning Organization

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2. **Stephanie Pollack**, Secretary of Transportation, MassDOT
3. **Vacant,** West Subregion Representative
4. **Maurice Depalo,** Northeast Subregion Representative
5. **Thomas Tinlin,** Acting Administrator, MassDOT-Highway
6. **Howard Drobner**, CMRPC Chairperson
7. **John Hebert,** Southeast Subregion Representative
8. **Kathlyn Inman**, North Subregion Representative
9. **Dennis Lemarche,** Southwest Subregion Representative
10. **Stephen O'Neil**, WRTA Chairperson

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2. **Brandon Wilcox,** FHWA Liaison
3. **Steven J. Tyler, P.E.,** MPO Advisory Committee

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6. **Amanda Gregoire**, City of Worcester
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8. **Jeff Hoynoski**, MassDOT-H District 2
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2. **Bryan Pounds,** MassDOT
3. **Brandon Wilcox,** FHWA Liaison

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Executive Summary

Overview

Mobility2040 is the long range transportation plan developed by the Central Massachusetts Metropolitan Planning Organization (CMMPO) for the south central Massachusetts planning region. Its purpose is to identify the multi-modal transportation needs of the region, the resources available to address the needs, and the initiatives and project investments planned for the next 25 years. An extensive process of public outreach was undertaken to achieve community input on regional performance management goals and to prioritize resource allocation.

As part of the development of the 2016 Mobility2040, the Central Massachusetts MPO reiterated its future transportation-related vision for the region:

> The CMMPO believes that a safe, efficient, and well-maintained transportation system, along with prudent land use planning and economic development, is an essential component of sustainable public policy aimed at improving people's lives.
>
> The CMMPO envisions Central Massachusetts in 2040 as a growing region of 40 well-connected, livable communities with congestion reduction, and improved multi-modal mobility and air quality. Healthy, creative transportation methods that integrate active travel modes through the use of technology will safely and efficiently move people between homes, jobs, and services and move products between places of manufacturing and sale.

Mobility2040 reflects the federal emphasis areas by:

- developing the plan through a performance-driven, outcome-based approach,
- examining access to essential services,
- coordinating across metropolitan planning boundaries, and
- through use of scenario planning strategies.

Together these emphasis areas help to determine the optimal mix of projects, initiatives, and funding allocation across modes and programs in order to address the needs of the region through 2040.

The plan also reflects federal guidance to:

- provide a benefits and burdens analysis to ensure fair treatment for minority, transportation vulnerable, and non-minority communities,
- work to improve livability in communities, and

- achieve sustainability by assessing and mitigating the potential effects of climate change.

The plan also considers the MassDOT emphasis on reducing greenhouse gases, the Healthy Transportation Compact Policy and other GreenDOT goals of improving the availability of alternative healthy modes of transportation, including achieving the future year mode shift goal set by MassDOT.

Finally, with extensive community involvement, Mobility2040 underscores the regional goals set by the CMMPO of:

- Goal 1: Reduce Congestion and Improve Mobility for all modes
- Goal 2: Improve the Safety and Security of the region
- Goal 3: Achieve State of Good Repair
- Goal 4: Increase Transportation Options and Promote Healthy Modes
- Goal 5: Reduce Greenhouse Gas and Promote Sustainable practices
- Goal 6: Equitable Transportation for all populations
- Goal 7: Improve Economic Vitality and Freight Movement

Future Growth

Future growth is an important consideration in transportation planning. Between years 2010 and 2040 the region is expected to add over 75,000 people and approximately 25,000 jobs. By comparison, in the last few decades Central Massachusetts growth averaged approximately 6-7% per decade and is now projected to increase at approximately 5% for each of the next three decades. This growth is in line with overall Massachusetts growth that is expected to slow compare to previous decades. Comparing to other regions in the Commonwealth Central Massachusetts growth, it is still robust. Within the region, it's significant to understand where growth will happen. The following explains where population and employment growth will occur.

Population

The communities in the CMRPC region can be grouped in the following three categories based on the past growth trends, available land and infrastructure for future growth, and planned future residential projects. The average growth for population is projected around 5% for the next few decades.

- **Low growth communities** (expected to remain close to the 2010 numbers): Auburn, Barre, Brookfield, Dudley, East Brookfield, Hardwick, Hopedale, Leicester, New Braintree, North Brookfield, Oakham, Oxford, Paxton, Princeton, Southbridge, Webster, West Brookfield, and Worcester.
- **Medium growth communities** (expected to grow at a rate close to the regional average): Blackstone, Boylston, Douglas, Holden, Mendon, Millbury, Millville, Shrewsbury, Spencer, Sutton, Upton, Warren, West Boylston, and Westborough.
- **High growth communities** (expected to grow more rapidly than the region as a whole): Berlin, Charlton, Grafton, Northborough, Northbridge, Rutland, Sturbridge, and Uxbridge.

Employment

The communities in the CMRPC region can be grouped in the following three categories based on the past employment and planned future projects. The average growth for employment is projected around 3-4% for the next few decades.

- **Low growth communities** (expected to remain close to the 2010 numbers): Blackstone, Brookfield, East Brookfield, Hardwick, Hopedale, Leicester, Mendon, Millbury, Millville, New Braintree, North Brookfield, Princeton, Southbridge, Spencer, Upton, Uxbridge, Warren, and West Brookfield.
- **Medium growth communities** (expected to grow at a rate close to the regional average): Auburn, Barre, Dudley, Grafton, Holden, Oakham, Oxford, Paxton, Rutland, Sturbridge, Webster, West Boylston, and Worcester.
- **High growth communities** (expected to grow more rapidly than the region as a whole): Berlin, Boylston, Charlton, Douglas, Northborough, Northbridge, Shrewsbury, Sutton, and Westborough.

Public Outreach

During the Mobility2040 development process, public participation was conducted through a variety of accessible outreach methods as outlined in the CMMPO Public Outreach Program (POP). CMMPO Staff used diverse approaches to educate and inform the public about the long-

range transportation plan process and encourage interested parties to express their views and provide input on transportation issues and prioritizing limited funding resources.

Information was distributed to the public through press releases, a Mobility2040 webpage, social media, and e-mails to a robust distribution list. The webpage focused on study information, the planning process, and how the public can be involved, including a five-minute informational video. The Mobility2040 Twitter account served the purpose of detailing public information meetings locations and times. Messages were sent to various committees, stakeholder groups, member community staff and boards, interested parties, and others.

A series of stakeholder meetings were held with transportation stakeholders in the region throughout the Mobility2040 development process. The purpose was to learn what issues and challenges exist within the current multi-modal transportation network while seeking input on crafting performance measures and targets that would be used to guide a vision for the future. This type of outreach allowed for interaction with a broad range of participants from a variety of expertise and backgrounds.

Fourteen public information meetings were held in different communities throughout the region, in a variety of venues including grocery stores, colleges, shopping centers, farmer's market, and business exposition. These meetings were designed for the public to interact with staff and learn about the Mobility2040 process and transportation happenings in their area. In addition to public information and stakeholder meetings, 623 surveys were completed by the public.

Overall, public input indicated that the automobile would continue to be the most important transportation method in the future and that roadway maintenance, safety, and congestion should remain the top priorities for transportation funding investment. As secondary and tertiary options, survey respondents displayed a shift in preference towards utilizing alternative transportation modes in the future. The results highlighted that bicycling, walking, and public transportation (both WRTA buses and MBTA commuter rail) would be important transportation modes to prioritize and fund.

While public input shared a general theme, but there were slight variations based on demographics. Younger people seem more interested in commuter rail and bicycle as options to consider and prioritize for funding allocation, while older individuals place more emphasis on walking and transit as focus points for future planning and investment. Input also fluctuated marginally based on the subregion.

Financially-Constrained Recommendations & Future Initiatives

Federal MAP-21 regulations require that the long-range regional transportation plan be a financially-constrained document. To ensure financial constraint, it is necessary to estimate the costs of all projects recommended in Mobility2040 and to assess the amount of funds that are expected to be available over the course of the planning horizon (2016-2040). Ultimately, the costs of the proposed projects should not exceed that of the expected funding. Because there is not enough expected revenue to meet all the need, not all the projects identified in the needs analysis can be included in the Financial Plan.

Throughout the past year, the CMMPO has embarked on a process to define and assess projects and initiatives for future programming based on:

- Review of all available data, including management systems data
- Sought and received extensive public input on needs and priorities for funding
- Developed policies, projects, and initiatives for possible consideration

In order to prioritize projects for funding, projects and initiatives then went through a two-step process. In the first step, projects and initiatives were prioritized into three tiers based on how well they address measures within the CMMPO performance management goals of:

- Reduce congestion & improve mobility for all modes
- Improve the safety & security of the region
- Achieve a state of good repair
- Increase transportation options & promote healthy modes
- Reduce greenhouse gas & promote sustainable practices
- Equitable transportation for all populations
- Improve economic vitality & freight movement

In the second step, the projects, primarily drawn from Tier 1, were combined into five scenarios which placed the projects into financially-constrained five-year bands for implementation through 2040. These scenarios were then analyzed in the Travel Demand model, and assessed for:

- congestion reduction and savings in vehicle miles travelled
- greenhouse gas effects
- geographic equity
- environmental justice benefits and burdens
- consistency with prior public input

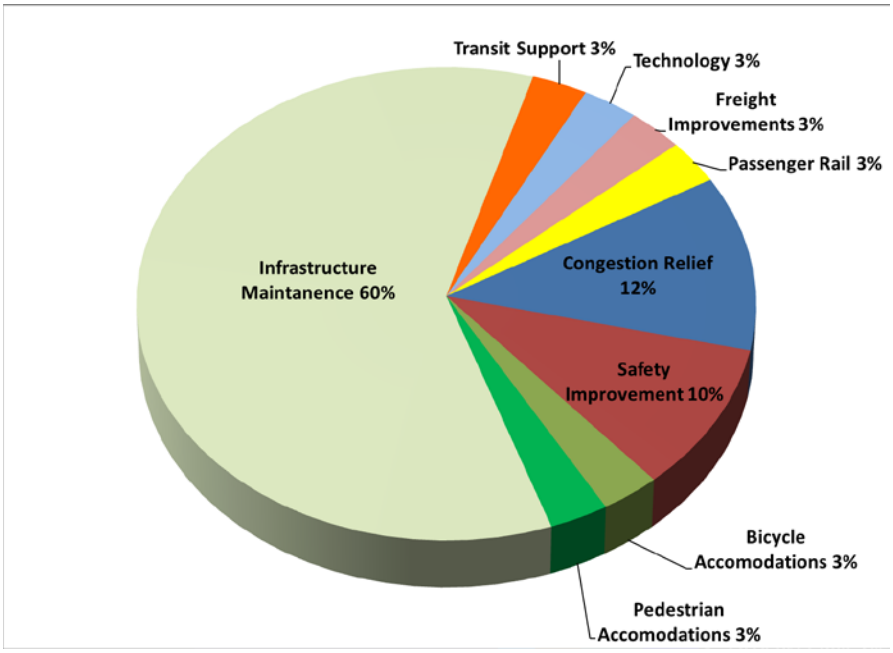
Following mix of program strategies, study initiatives, and projects were endorsed by the CMMPO based on the analysis mentioned above, project specific information, and community consensus.

Management & Operations Considerations

Given the limited funding, competing priorities, and the comprehensive list of unmet needs, it is crucial to maintain the current system at optimal efficiency. Also various management and operation methodologies such as ITS, Transportation Demand Management strategies, Park & Ride lots, Transit Signal Priority, and Corridor Management strategies, such as signal coordination, will help the region reach its goals of improving mobility, reducing greenhouse gases, improving sustainability and promoting economic development.

Based on these considerations, the CMMPO chose to spend the regional target funding among diverse transportation programs and modes. The chosen funding scenario maintains current roadway and bridge infrastructure in the "fair" category with 60% of the total regional transportation spending allocation. High funding allocations are also included for improved safety and congestion reduction projects, as well as separate funding categories created for bicycle and pedestrian infrastructure improvements. The remaining categories (transit support, technology, freight, and passenger rail) were funded at an allocation of 3% each.

Figure 1: Regional Target Funding Programs



Policies

While the CMMPO did not adopt any new policies during the development of Mobility2040, their adoption of Option 1 allocation of funding from regional targets and their choices of major initiatives and infrastructure projects re-affirms the commitment to:

- provide for an increasingly balanced multi-modal transportation system that will improve the mobility for users of all modes;
- provide adequate funding to maintain the current system;
- increase healthy options that reduce congestion and greenhouse gas, and are more sustainable;
- improve system safety and security; and
- continue to promote economic vitality & freight movement.

Initiatives

There are several projects that still require more definition before moving forward, and they have been termed Initiatives. The Blackstone River Greenway, the Multimodal connection between the Blackstone River Greenway to the Mass-Central Rail Trail and the Pedestrian Connection between Blackstone River Greenway to the Mid-State Trail are all initiatives that require identification of the project lead agency and more definition of project scope. These initiatives will help move the project forward in future years.

Table 1: Bicycle and Pedestrian Initiatives

Study Cost will be included in the Unified Planning Work Program

Recommended Implementation Schedule	Project	Project Scope
2015-2020	Blackstone River Greenway (Segments 3,4 and 5)	To collaborate with the lead agency to identify segments, establish costs for each segment and project scope
2020-2025	Multimodal Connection: Blackstone River Greenway to Mass-Central Rail Trail	To collaborate with the lead agency to establish costs and project scope
2020-2025	Pedestrian Connection: Blackstone River Greenway to Mid-State Trail	To collaborate with the lead agency to establish costs and project scope

Major Infrastructure Projects

The CMMPO deliberated extensively on what major infrastructure projects to recommend in the Mobility2040 Plan, given the need to remain within the constraints of estimated funding available, and given that revenues are only expected to grow at 1.5% and costs are projected to grow at 4%. This task was made more difficult for projects in the later years of the plan because it was often necessary to estimate costs on projects that are in the early concept stages. The following represent the CMMPO recommendations.

Table 2: Major Infrastructure Projects

Highway Projects

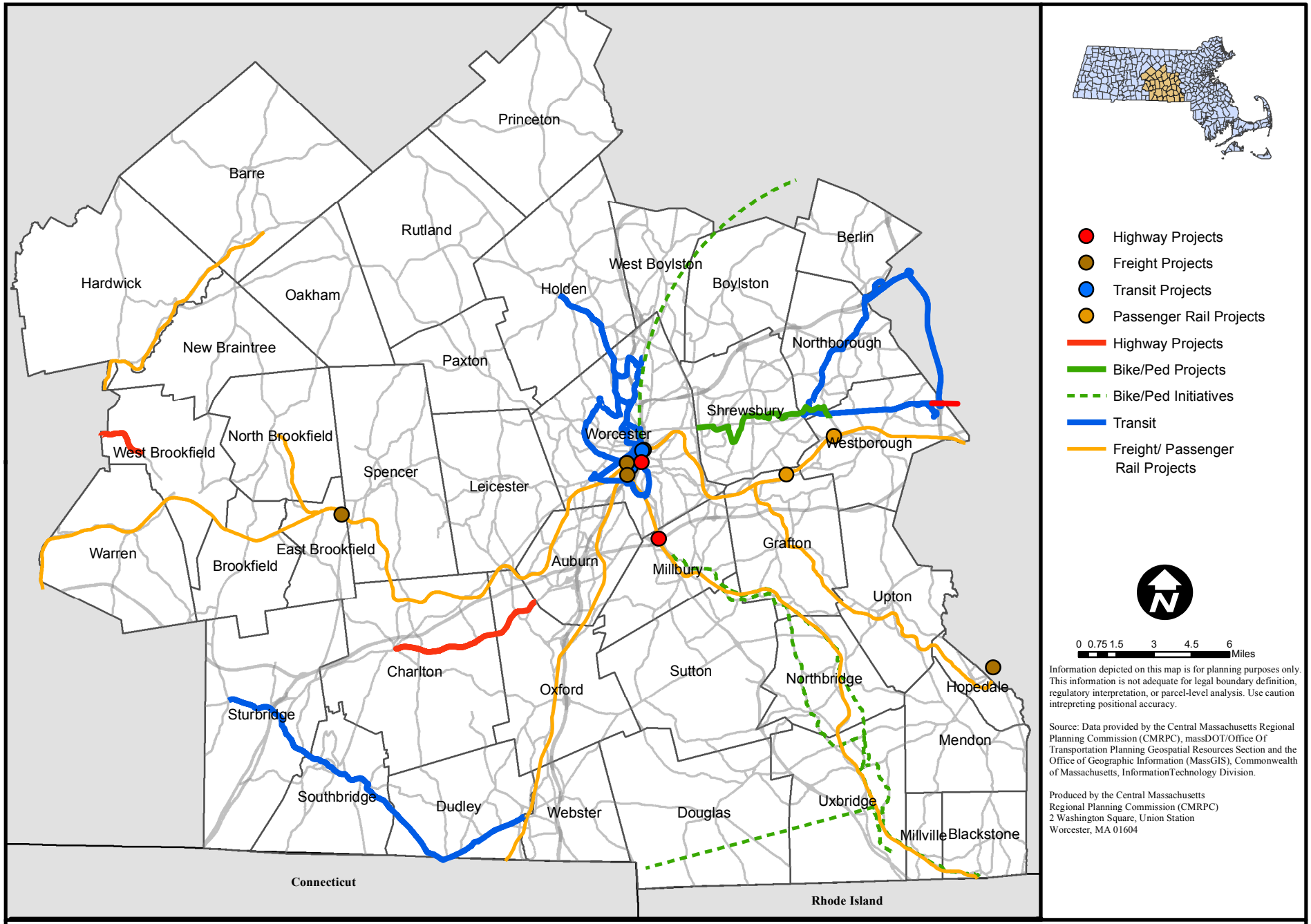
Recommended Implementation Schedule	Project Name	Project Scope	Project Cost (in Millions)
2016-2020	Route 9 - West Brookfield	2.1 mile segment of rural highway requires widening by 10' to address safety and accommodate bicycles and pedestrians	$12.17
2021-2025	Rte 9 Improvements from Rte 9/I-495 interchange to Rte 9/Crystal Pond Road intersection	Enhance safety and capacity improvements along Rte 9	$11.40
	Rte 20 Oxford (Rte 20/12 to Rte 20/56 intersection)	Rte 20 modernization with median barrier and intersection improvements Charlton/Oxford	$23.00
2026-2030	Rte 20 Oxford/Charlton (West of Rte 20/56 to Richardson's corner)	Rte 20 modernization with median barrier and intersection improvements Charlton/Oxford	$34.00
2031-2035	I-290/Vernon St/Kelly Square Bridge Expansion - Worcester	Reconstruction & widening of Vernon Street (Route 122A) bridge over I-290 and related ramp work	$23.84
2036-2040	Route 146/20/MassPike Interchange - Millbury	Observed congestion causes operational issues. Investigate improved signals and interchange roadways.	$29.00

Bicycle and Pedestrian Projects

Recommended Implementation Schedule	Project	Project Cost (in Millions)	Project Scope
2015-2020	Boston Worcester Air-Line Trail	$0.50	TIP or TAP funding

Freight Rail Projects

Recommended Implementation Schedule	Project	Project Scope	Project Cost (in Millions)	Comment
2015-2020	Grafton & Upton Railroad	At-grade highway crossing improvements	$0.50	Private funding
2020-2025	Providence & Worcester Railroad	Bridge over Southbridge Street	$2.00	Private funding
2015-2040	East Brookfield & Spencer Railroad	Various expansion and IRAP track improvements for improved operations	$0.50	Private funding
2015-2040	Providence & Worcester Railroad	IRAP track improvements	$0.50	Private funding



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Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT/Office Of Transportation Planning Geospatial Resources Section and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, InformationTechnology Division.

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Figure II Major Infrastructure

Transit-Related Initiatives

The WRTA is considering expansion/upgrade of the WRTA Hub Transfer facility at Union Station and implementation of Transit Signal Priority to improve transit operations in congested areas.

The major capital rail initiatives anticipated over the planning horizon of Mobility2040 is the continued MassDOT study of expanding high speed passenger rail between Worcester and Springfield, as well as possible private passenger rail service re-instituted over Providence & Worcester rail lines through the Blackstone Valley from Worcester to Providence, RI. An additional initiative is considering upgrades to the three MBTA commuter rail stations in Westborough, Grafton, and Worcester.

Some of these initiatives are more likely to become projects than others, but each will require additional study to move forward, and costs and revenue sources will have to be identified.

Transit-Related Projects

A major transit capital project anticipated over the planning horizon of Mobility2040 is the creation of transit "mini hubs" within the region, to house vehicle fleets and serve as connection and transfer facilities. Another capital project is the replacement of the WRTA Maintenance and Operations facility, which is currently underway, and will be completed in 2016.

The WRTA also intends to embark on a replacement of the fixed route fleet once again in 2020 and has programmed a modest expansion of the fleet in the current four-year Transportation Improvement Program. The WRTA will be purchasing nine expansion vehicles beginning in 2017 to accommodate recommendations contained in the 2015 Comprehensive Service Analysis.

Table 3: Transit and Commuter Rail Projects

Transit Projects

Recommended Implementation Schedule	Project	Project Scope	Project Cost (in Millions	Comments
2015-2020	Route 43 - New route connecting Webster, Dudley, Southbridge, and Sturbridge	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA	Operating cost	Not part of capital expenditure
2015-2020	Route 32 - New route to connect Holden with Worcester.	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA	Operating cost	Not part of capital expenditure
2020-2025	Route 17 - New route to connect Westborough Office Park, Solomon Pond Mall, and Northborough Crossing (Wegman's).	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA	Operating cost	Not part of capital expenditure
2020-2025	Route 44 - Proposed new route to connect colleges: - Becker, WPI, Assumption, WSU, Clark, Holy Corss, Quinsigamond CC	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA	Operating cost	Not part of capital expenditure
2015-2040	New fixed route buses	Replacement or expansion of the WRTA fixed route fleet.	$93.00	Fleet expansion item

Commuter Rail Projects

Recommended Implementation Schedule	Project	Project Cost (in Millions)	Comment
2020-2025	Worcester-Providence passenger service and railroad improvements	TBD	Private Railroad operations and funding
2015-2040	MBTA commuter rail station upgrades	TBD	MBTA funding

Conclusion

Mobility2040 provides a blueprint to achieving a balanced multi-modal transportation system that is reasonably maintained. Although additional funding would could be well-spent on expanding and better maintaining the system, the resources that are expected to be available have been programmed in a responsible manner. Based on the above considerations, Mobility2040, the long range plan for the CMMPO region, meets all federal planning and financial constraint requirements.

CHAPTER I

Introduction and Background

Introduction

Mobility2040 is the long range transportation plan developed by the Central Massachusetts Metropolitan Planning Organization (CMMPO) for the south central Massachusetts planning region. Its purpose is to identify the multi-modal transportation needs of the region, the resources available to address the needs, and the initiatives and project investments planned for the next 25 years. An extensive process of public outreach was undertaken to achieve community input on regional performance management goals and to prioritize resource allocation.

As part of the development of the 2016 Mobility2040, the Central Massachusetts MPO reiterated its future transportation-related vision for the region:

> The CMMPO believes that a safe, efficient, and well-maintained transportation system, along with prudent land use planning and economic development, is an essential component of sustainable public policy aimed at improving people's lives.
>
> The CMMPO envisions Central Massachusetts in 2040 as a growing region of 40 well-connected, livable communities with congestion reduction, and improved multi-modal mobility and air quality. Healthy, creative transportation methods that integrate active travel modes through the use of technology will safely and efficiently move people between homes, jobs, and services and move products between places of manufacturing and sale.

Mobility2040 reflects the federal emphasis areas by:

- developing the plan through a performance-driven, outcome-based approach,
- examining access to essential services,
- coordinating across metropolitan planning boundaries, and
- through use of scenario planning strategies.

Together these emphasis areas will determine the optimal mix of projects, initiatives, and funding allocation across modes and programs in order to address the needs of the region through 2040.

The plan also reflects federal guidance to:

- provide a benefits and burdens analysis to ensure fair treatment for minority, transportation vulnerable, and non-minority communities,
- work to improve livability in communities, and

- achieve sustainability by assessing and mitigating the potential effects of climate change.

The plan also considers the MassDOT emphasis on reducing greenhouse gases, the Healthy Transportation Compact Policy and other GreenDOT goals of improving the availability of multi-modal, healthy, active transportation options, including achieving the future year mode shift goal set by MassDOT.

Finally, with extensive community involvement, Mobility2040 underscores the regional goals set by the CMMPO of:

- Goal 1: Reduce Congestion and Improve Mobility for all modes
- Goal 2: Improve the Safety and Security of the region
- Goal 3: Achieve State of Good Repair
- Goal 4: Increase Transportation Options and Promote Healthy Modes
- Goal 5: Reduce Greenhouse Gas and Promote Sustainable practices
- Goal 6: Equitable Transportation for all populations
- Goal 7: Improve Economic Vitality and Freight Movement

Population and Employment Projections

Background

The Central Massachusetts Metropolitan Planning region see Figure I-1 (also referred to as the Central Massachusetts Regional Planning District) is made up of the City of Worcester and the 39 surrounding towns of south-central Worcester County and is one of 13 planning regions in the state. The region is diverse, extending from the urban core of Worcester, the second largest city in the Commonwealth, through the suburban neighborhoods of the nearby towns, to the rural fields and farms of the Brookfields, Hardwick, and New Braintree. It is a transportation crossroads for New England, located at the junction of four major interstate highways and three major railroads. It is centered about 50-60 miles from the major urban areas of Boston, Springfield, Providence RI, and Hartford CT. From Princeton on the north to Douglas on the Rhode Island state line is about 35 miles, and it's about the same distance from Warren in the west to Westborough in the east. The total area of the region is about 960 square miles. It contains the headwaters and main trunk of the Blackstone River, one of the major river basins of Massachusetts and Rhode Island stretching from Worcester to Narragansett Bay near Providence, and includes the John H. Chafee Blackstone River Valley National Heritage Corridor in Massachusetts. Parts of several other river basins are also found within the Region, including the Chicopee, French-Quinabaug, Nashua and Concord-Sudbury-Assabet.

The transportation system in the CMMPO region is a collection of roads, bridges, transit services, freight facilities, bicycle routes, pedestrian facilities and intermodal connectors that need to work as an integrated system within and throughout the 40 communities and beyond. The transportation system is maintained and operated by a number of different agencies, including but not limited to the Massachusetts Highway Department, the Massachusetts Bay Transportation Authority, the Massachusetts Port Authority, the Department of Conservation and Recreation, and local entities.

Historically the region was a center for agriculture, manufacturing, and education. In recent years both agricultural and manufacturing activity has declined significantly, although still important to the local economy. New, high-tech and biotech firms have come to the region, taking advantage of the well-educated workforce. In addition, healthcare systems are also significant employers.

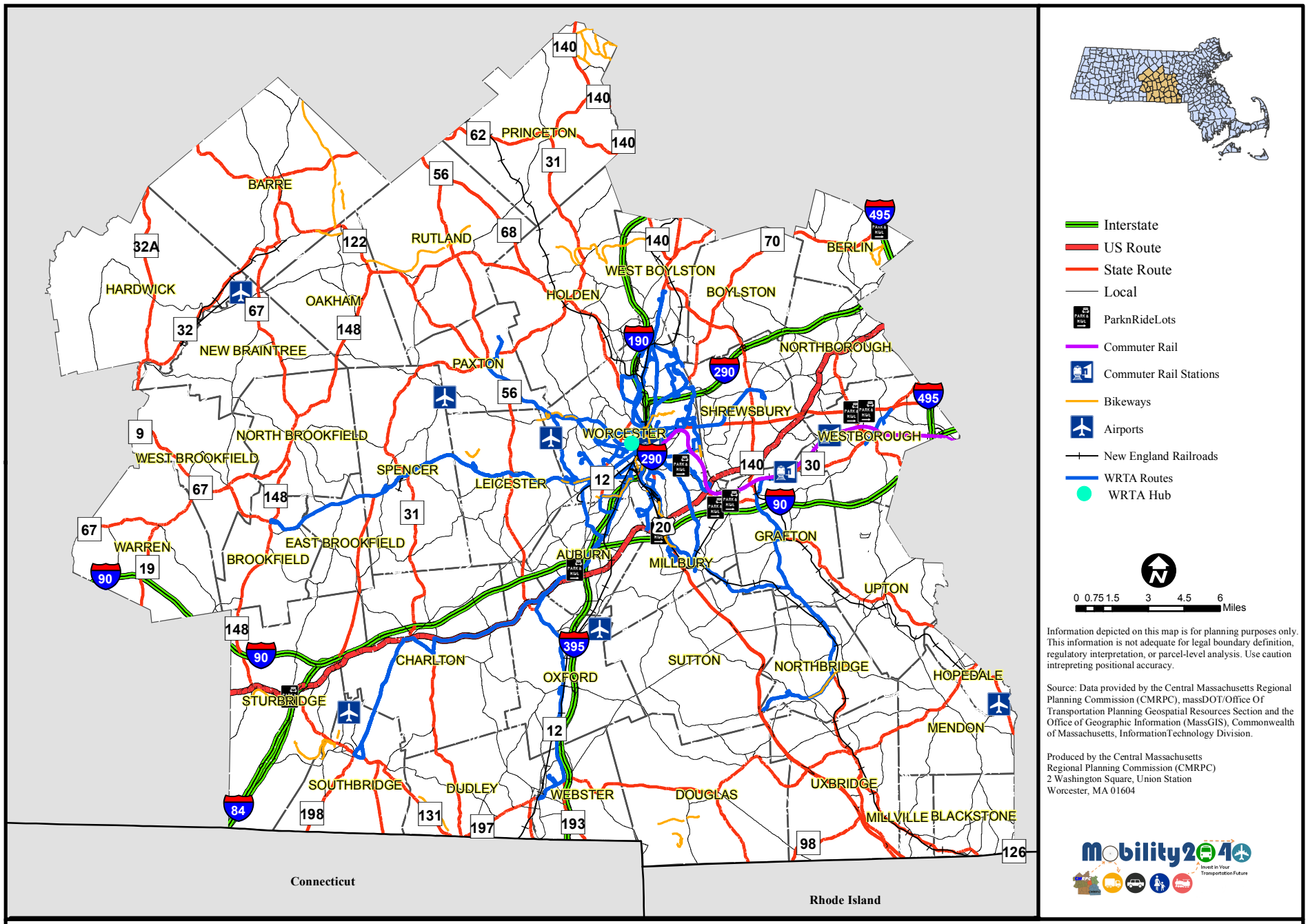
The trend since the 1950s has been toward increasing residential development outside the central city at the expense of the city's population, although the city has seen a growing interest in urban living. Interstate 495, the fastest growing industrial corridor in the state, brushes the eastern edge of the region and has encouraged rapid residential development in the nearby towns including

those in Central Massachusetts. The transportation infrastructure in the region has facilitated the trend of people living in this area while commuting daily to eastern Massachusetts. That trend, too, is expected to continue. This trend is validated by increased auto travel along I-90 and improved ridership on the commuter rail to Boston. Also, the abundance of affordable housing in comparison to housing prices in Eastern Mass is still the trend that is fueling living in Central Mass and commuting to the east. As of 2010, more than 20% of the workers residing in Central Massachusetts commuted to jobs outside the region in eastern Massachusetts. The region is a net exporter of workers as well, with nearly twice as many workers leaving the region daily for jobs elsewhere as come in from other regions.

Future Growth

In the last 30 years, population and employment growth in the Central Massachusetts Region have outpaced the rest of state; however, this growth has not occurred uniformly throughout the region and through the decades. Between 2000 and 2010 the employment decreased about 3% and is expected to get back to the 2000 levels before 2020. This was a trend observed by the entire nation and Massachusetts due to the economic recession in 2007-2008. In order to forecast future trends it is useful for examining the actual demographic trends in Central Massachusetts in the past few decades. Tables I-1[1] and I-2[1] found on the following pages depict the population and employment for each town in the six subregions current and projected from 2000 through 2040.

[1] 2040 population and employment numbers are subject to change pending final concurrence from MassDOT and individual town input.



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Mobility2040 Invest in Your Transportation Future

Figure I-1 CMRPC Transportation System Map

Table I-1 Municipal Population Projections by Subregion

	Population			
	US Census Bureau			CMRPC Projections*
	2000	2010	% Growth	2040
North Subregion				
Barre	5,113	5,398	6%	5,936
Holden	15,621	17,346	11%	19,862
Oakham	1,673	1,902	14%	2,053
Paxton	4,386	4,806	10%	5,493
Princeton	3,353	3,413	2%	3,828
Rutland	6,353	7,973	25%	9,543
West Boylston	7,481	7,669	3%	8,766
Total North	43,980	48,507	10%	55,481
Northeast Subregion				
Berlin	2,380	2,866	20%	4,336
Boylston	4,008	4,355	9%	5,051
Northborough	14,013	14,155	1%	17,836
Shrewsbury	31,640	35,608	13%	41,171
Westborough	17,997	18,272	2%	21,010
Total Northeast	70,038	75,256	7%	89,404
Southeast Subregion				
Blackstone	8,804	9,026	3%	10,213
Douglas	7,045	8,471	20%	9,820
Grafton	14,894	17,765	19%	22,390
Hopedale	5,907	5,911	0%	6,809
Mendon	5,286	5,839	10%	6,416
Millbury	12,784	13,261	4%	15,319
Millville	2,724	3,190	17%	3,522
Northbridge	13,182	15,707	19%	18,855
Sutton	8,250	8,963	9%	10,213
Upton	5,642	7,542	34%	10,357
Uxbridge	11,156	13,457	21%	17,022
Total Southeast	95,674	109,132	14%	130,936
Southwest Subregion				
Auburn	15,901	16,188	2%	17,814
Charlton	11,263	12,981	15%	15,380
Dudley	10,036	11,390	13%	12,503
Oxford	13,352	13,709	3%	15,601
Southbridge	17,214	16,719	-3%	17,814
Sturbridge	7,837	9,268	18%	12,392
Webster	16,415	16,767	2%	19,142
Total Southwest	92,018	97,022	5%	110,646
West Subregion				
Brookfield	3,051	3,390	11%	3,745
East Brookfield	2,097	2,183	4%	2,382
Hardwick	2,622	2,990	14%	3,289
Leicester	10,471	10,970	5%	12,048
New Braintree	927	999	8%	1,071
North Brookfield	4,683	4,680	0%	5,154
Spencer	11,691	11,688	0%	12,915
Warren	4,776	5,135	8%	5,709
West Brookfield	3,804	3,701	-3%	4,096
Total West	44,122	45,736	4%	50,409
Central Subregion				
Worcester	172,648	181,045	5%	197,196
Regional Total	518,480	556,698	7%	634,072

*Projections - Draft MassDOT regional control totals March 2015

Table I-2 Municipal Employment Projections by Subregion

	Employment			
	Labor & Workforce Development			CMRPC Projections*
	2000	2010	% Growth	2040
North Subregion				
Barre	1,161	1,230	6%	1,334
Holden	3,923	3,520	-10%	3,875
Oakham	138	210	52%	227
Paxton	703	850	21%	915
Princeton	805	740	-8%	813
Rutland	1,076	1,060	-1%	1,221
West Boylston	3,817	3,730	-2%	4,320
Total North	11,623	11,340	-2%	12,705
Northeast Subregion				
Berlin	666	480	-28%	499
Boylston	1,429	1,800	26%	1,728
Northborough	6,923	5,800	-16%	7,158
Shrewsbury	14,556	13,010	-11%	14,069
Westborough	26,574	23,610	-11%	26,167
Total Northeast	50,148	44,700	-11%	49,621
Southeast Subregion				
Blackstone	1,192	1,030	-14%	1,458
Douglas	887	830	-6%	1,047
Grafton	4,634	4,100	-12%	4,464
Hopedale	1,831	1,620	-12%	1,637
Mendon	1,501	1,280	-15%	1,488
Millbury	3,884	5,050	30%	5,490
Millville	202	270	34%	301
Northbridge	4,715	5,320	13%	6,234
Sutton	1,554	2,110	36%	2,351
Upton	1,071	1,010	-6%	1,598
Uxbridge	2,828	3,080	9%	3,690
Total Southeast	24,299	25,700	6%	29,757
Southwest Subregion				
Auburn	12,299	9,940	-19%	10,685
Charlton	2,839	3,740	32%	4,395
Dudley	2,978	2,720	-9%	3,109
Oxford	3,532	3,760	6%	4,691
Southbridge	6,690	5,820	-13%	6,877
Sturbridge	5,163	4,470	-13%	5,188
Webster	6,667	6,690	0%	7,932
Total Southwest	40,168	37,140	-8%	42,877
West Subregion				
Brookfield	499	460	-8%	500
East Brookfield	387	420	9%	403
Hardwick	342	390	14%	397
Leicester	2,251	2,290	2%	2,418
New Braintree	157	210	34%	245
North Brookfield	1,251	910	-27%	918
Spencer	3,758	3,090	-18%	3,344
Warren	1,293	600	-54%	629
West Brookfield	956	830	-13%	860
Total West	10,894	9,200	-16%	9,714
Central Subregion				
Worcester	107,536	95,920	-11%	105,115
Regional Total	244,668	224,000	-8%	249,790

*Projections - Draft MassDOT regional control totals March 2015

Some Basic Definitions:

Population - All people living in a geographic area.

Household - A person or group of people who occupy a housing unit as their usual place of residence. The number of households equals the number of occupied housing units in a census.

Employment - The total number of persons on establishment payrolls employed full or part time who received pay for any part of the pay period.

MassDOT - Office of Planning recently released the draft future demographic control totals for all the State's subregions. The Central Massachusetts region's population and employment totals as released were in keeping with the demographic trends the region was experiencing in the past decade. This plan uses several sources for deriving the town level projections. They include, the town-level projections that staff has developed using the previous RTP projection trends, priority development and preservation areas study conducted for the CMRPC region, zoning/parcel information and other known landuse/infrastructure constraints from local input. When staff receives input and concurrence from MassDOT on the town-level projections, staff will refine the draft town level projections and communicate with the communities for their input and comment to finalize the town level projections.

Future year projections through 2040 are not predictions *per se*, nor are they expressions of an ideal future. They are simply educated assessments which offer a picture of likely socio-economic changes in the region, including the population, number of households and number of jobs by municipality. In providing these projections to each municipality, CMRPC hopes to inform discussion on how communities shape their policies to address expected growth. Together CMRPC and the towns it serves can move the region toward building the future most desired by those who live and work within its boundaries.

Primarily, the demographic data described above has been derived in order to inform this Regional Transportation Plan, out of which flows the Central Massachusetts Transportation Improvement Program (TIP), the annual list of projects slated to receive federal funding. These two documents are prerequisites for the region's eligibility for federal transportation funding. The projections are also used in the region's Travel Demand Forecast model, which estimates the current and future use of the region's transportation infrastructure and aids in analyzing projects being considered for both the RTP and the TIP.

Key Findings

Between years 2010 and 2040 the region is expected to add over 75,000 people, nearly 40,000 household units, and approximately 25,000 jobs. By comparison, in the 30 years between 1980 and 2010, the region added 122,000 people to its population and over 40,000 jobs.

Predicting future demographics is an important aspect to advancing transportation planning. Without the knowledge of where and when people and jobs occur in the future it would be very difficult to address future needs and issues. Mobility2040 plan looks to cater to the transportation needs and address issues for at least 25 years into the future. The travel demand model helps connect the demographic trends with travel patterns and behavior of the travelling public.

Population & Housing

- Currently the Central Massachusetts Region is home to 556,698 people, 8.5% of the Massachusetts population
- Currently the Central Massachusetts Region contains approximately 210,870 occupied housing units, 7.7% of the state's housing units
- The communities in the CMRPC region can be grouped in the following three categories based on the past growth trends, available land and infrastructure for future growth, and planned future residential projects. All rates of growth were projected only to the nearest percent, and were discussed with the stakeholders before converting the rates into projected counts.
    - **Low growth communities** (expected to remain close to the 2010 numbers): Auburn, Barre, Brookfield, Dudley, East Brookfield, Hardwick, Hopedale, Leicester, New Braintree, North Brookfield, Oakham, Oxford, Paxton, Princeton, Southbridge, Webster, West Brookfield, and Worcester.
    - **Medium growth communities** (expected to grow at a rate close to the regional average): Blackstone, Boylston, Douglas, Holden, Mendon, Millbury, Millville, Shrewsbury, Spencer, Sutton, Upton, Warren, West Boylston, and Westborough.
    - **High growth communities** (expected to grow more rapidly than the region as a whole): Berlin, Charlton, Grafton, Northborough, Northbridge, Rutland, Sturbridge, and Uxbridge.

Employment

- In 2000 the Central Massachusetts Region was home to approximately 245,000 jobs, about 7% of the jobs in Massachusetts. This number has decreased to 224,000 in 2010, and in 2040 the region is expected to host 250,000 jobs, about 7.3% of the total jobs in Massachusetts. This trend seems to be on par with historical data.
- Due to the current economic recession many economists predict that it will be several years, perhaps between 2017 and 2020, before employment numbers climb back to the 2005 levels.
- The communities in the CMRPC region can be grouped in the following three categories based on the past employment and planned future projects. All rates of growth were projected only to the nearest percent, and were discussed with the stakeholders before converting the rates into projected counts.

- **Low growth communities** (expected to remain close to the 2010 numbers): Blackstone, Brookfield, East Brookfield, Hardwick, Hopedale, Leicester, Mendon, Millbury, Millville, New Braintree, North Brookfield, Princeton, Southbridge, Spencer, Upton, Uxbridge, Warren, and West Brookfield.
- **Medium growth communities** (expected to grow at a rate close to the regional average): Auburn, Barre, Dudley, Grafton, Holden, Oakham, Oxford, Paxton, Rutland, Sturbridge, Webster, West Boylston, and Worcester.
- **High growth communities** (expected to grow more rapidly than the region as a whole): Berlin, Boylston, Charlton, Douglas, Northborough, Northbridge, Shrewsbury, Sutton, and Westborough.

The demographic projections presented here are estimates based on available data and short-term and long-term trends. They provide information to decision makers who can take actions and make choices that might ultimately affect the actual results. Markets and the nature of the transportation and working environments are likely to change between now and 2040, impacting the actual numbers in uncertain ways. Nevertheless, best educated estimates are made in order to have some rational basis for planning.

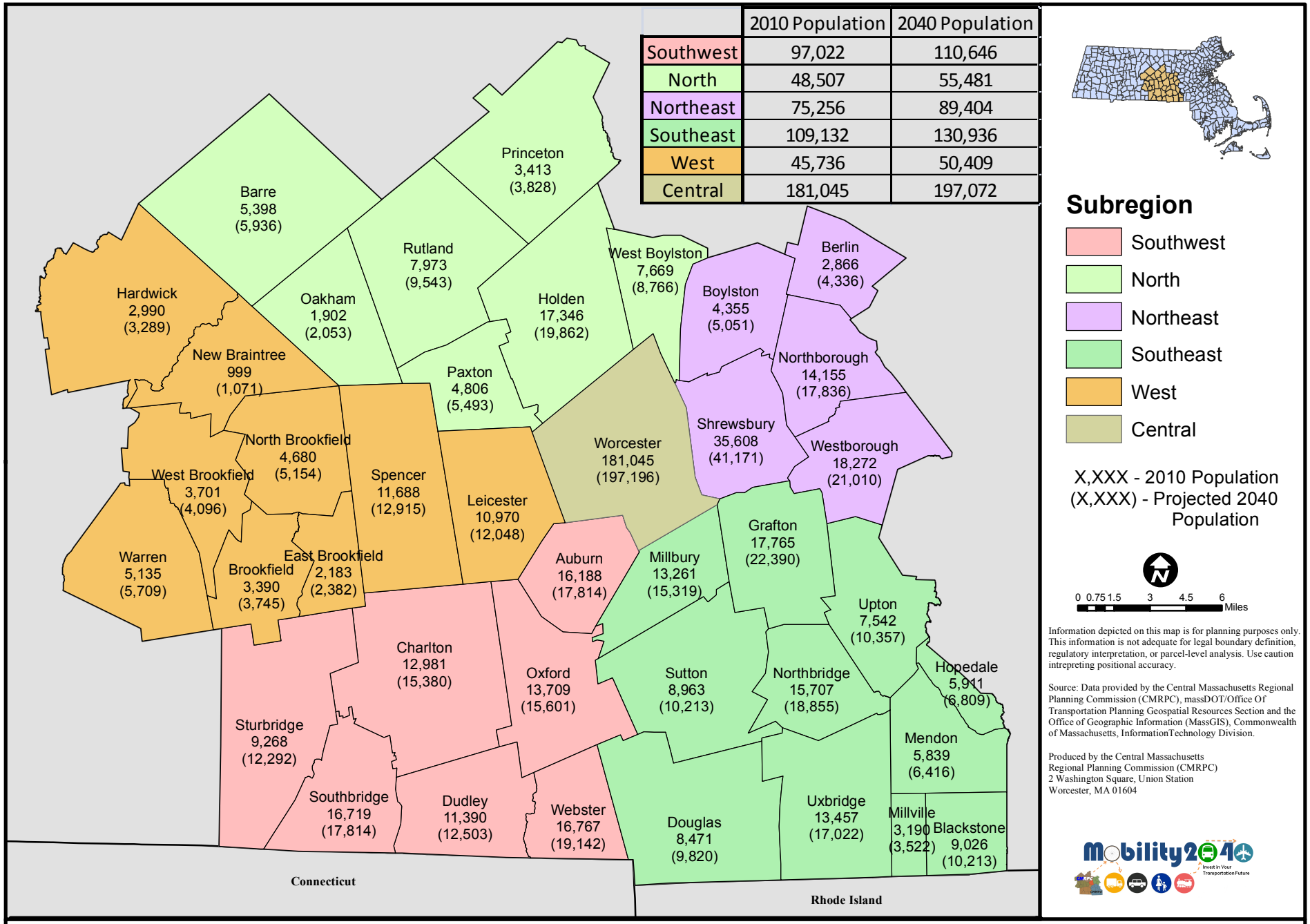


Figure I-2 2010 Population and Projected 2040 Population

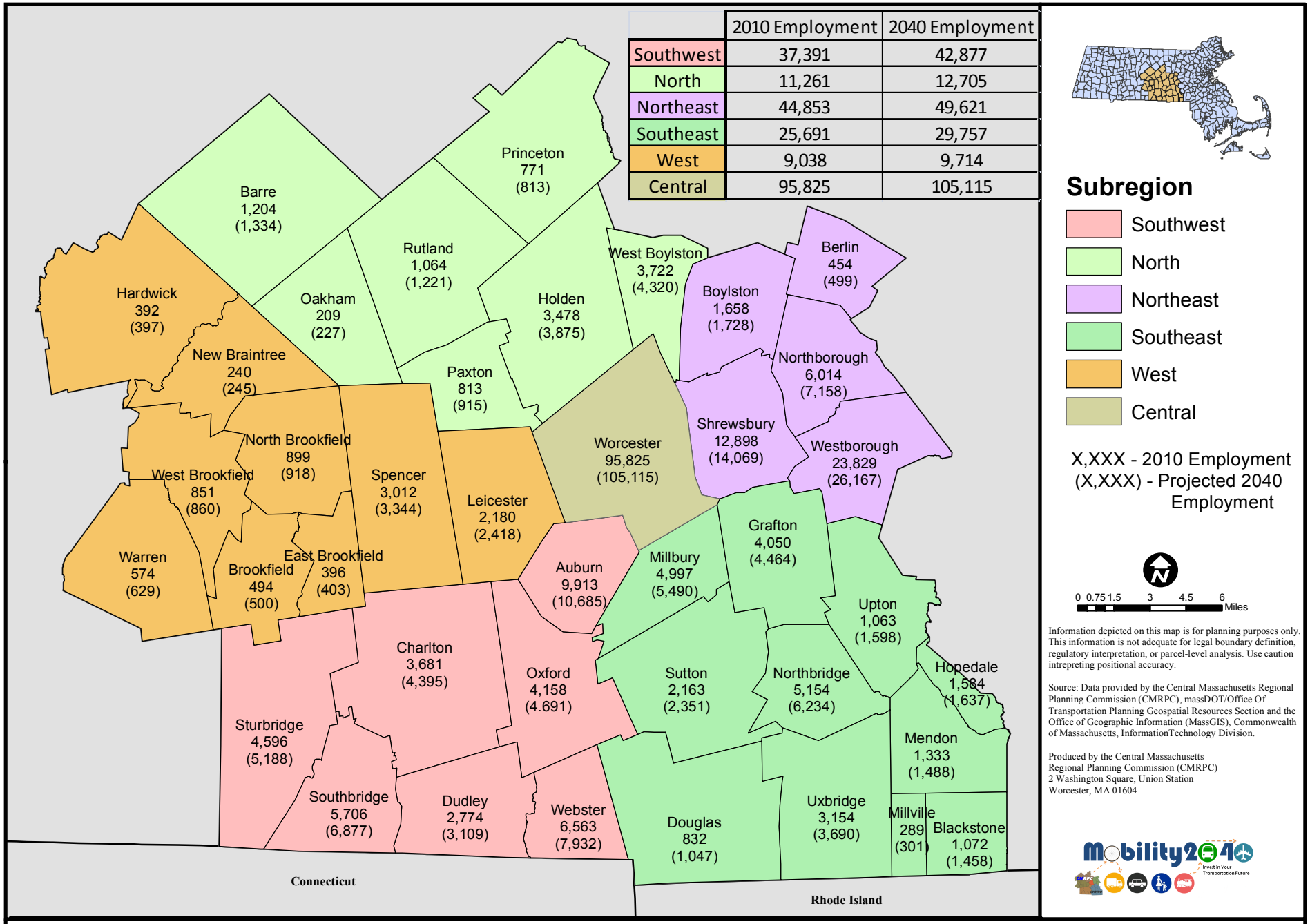


Figure I-3 2010 Employment and Projected 2040 Employment

Public Outreach

Overview

During the Mobility2040 development process, public participation was conducted through a variety of outreach methods as outlined in the CMMPO Public Outreach Program (POP). CMMPO Staff used diverse approaches to educate and inform the public about the long-range transportation plan process and encourage interested parties to express their views and provide input on transportation issues in the Central Massachusetts region.

Information was distributed to the public through press releases, the Mobility2040 webpage on the CMRPC website, social media, and e-mails to a robust distribution list. The press release was sent to over forty traditional and online-only media outlets throughout the region. Staff produced the Mobility2040 webpage and hosted the page through the CMRPC website. The page focuses on background information, the planning process, and how the public can be involved.

Using YouTube, staff created a five-minute video based on the information that was listed on the webpage. For accessibility purposes, a transcript of the video was provided. The Mobility2040 Twitter account served the purpose of detailing public information meetings locations and times. E-mails were sent to various committees, stakeholder groups, member community staff and boards, interested parties, and others.

CMMPO and CMMPO Advisory Committee Meetings

The Central Massachusetts Metropolitan Planning Organization (CMMPO) is the region's transportation policy and programming body. As required by MAP-21, the CMMPO oversees the development and update of a Long Range Transportation Plan document, every four years in the Central Massachusetts region.

The CMMPO has discussed the development of Mobility2040 at all of their monthly meetings starting in September 2014 and continuing to the present. The CMMPO Advisory Committee is a group formed by the CMMPO to provide input on a wide range of both technical and non-technical subjects. The Advisory Committee consists of a number of individuals from a variety of backgrounds with expertise in both transportation and transportation-related topics such as land use and conservation. As directed by the CMMPO, the Advisory Committee has discussed the development of Mobility2040 at all of their monthly meetings starting in August 2014 and continuing to the present.

Stakeholder Meetings

A series of meetings were held with transportation stakeholders in the region throughout the Mobility2040 development process. The purpose was to learn what issues and challenges exist within the current multi-modal transportation network while seeking input on crafting performance measures and targets that would be used to guide a vision for the future. This type of outreach allowed for interaction with a broad range of participants from a variety of expertise and backgrounds. A listing of the five stakeholder meetings that were conducted can be found in the accompanying Technical Appendix.

Public Information Meetings

A series of public information meetings were held in different communities throughout the region. These meetings were designed for the public to interact with staff and learn about the Mobility2040 process and transportation happenings in their area. Meetings included a table-top with a poster board display of various transportation topics, paper and interactive surveys, and business cards with the Mobility2040 webpage and social media information. There were fourteen public information meetings completed at a variety of venues; grocery stores, colleges, shopping centers, farmer's market, business exposition, and others. A listing of the public information meetings that were conducted can be found in the Technical Appendix.

Survey Methods

In addition to public information and stakeholder meetings, three survey methods were prepared to encourage participation. Overall, 623 surveys were completed. The complete results and copies of each survey method can be found in the Technical Appendix.

The first method was an interactive survey tool displayed on a computer table that was available at public information and stakeholder meetings, which asked participants how they would hypothetically invest into seven main categories that transportation dollars are invested into. The results of this particular survey will assist in developing funding scenarios in the financial chapter. This survey received 61 responses.

The second method was a paper survey that was distributed at all Mobility2040 meetings and was available in English and Spanish, for accessibility purposes. The survey asked respondents to choose their top three priorities for investment of transportation funding. Paper surveys were

also available at public libraries and other municipal buildings in twenty-two member communities. This survey received 229 responses.

The third method was an eight question online survey that incorporated questions from the other two survey methods. This survey received 333 responses, which proved more successful than the online survey conducted for the 2012 RTP. Links to the survey website were sent primarily through e-mail, the Mobility2040 website and Twitter page, and were available on the homepage of a few member community websites. Questions included the location of where respondents live and work, modes of travel, methods of transportation important in the present and future, issues to consider in Mobility2040, and the most difficult areas and/or intersections faced.

Survey Results

Survey respondents indicated that the automobile would continue to be the most important transportation method in the future and that roadway maintenance, safety, and congestion should remain the top priorities for transportation funding investment. As secondary and tertiary options, survey respondents displayed a shift in preference towards utilizing multi-modal, healthy, active transportation options in the future. The results highlighted that bicycling, walking, and public transportation (both WRTA buses and MBTA commuter rail) would be important transportation modes to prioritize and invest transportation funding into.

Overall, the survey results shared a general theme, but answers slightly varied based on the results of the demographic information provided by respondents. Younger respondents selected commuter rail and bicycle as options to consider and prioritize for funding allocation, while older respondents placed more emphasis on walking and transit as focus points for future planning and investment. Survey answers fluctuated marginally based on the respondents subregion.

The complete survey results can be found in the Technical Appendix or viewed online through the Mobility 2040 website.

CHAPTER II

Performance Management

Introduction

The 2016 Central Massachusetts Long Range Transportation Plan includes performance management measures, primarily as a requirement of the state's landmark transportation reform legislation signed in June 2009, but expanded with the current Moving Ahead for Progress in the 21st Century, also known as MAP-21. The Federal legislation creates a performance-based and multimodal program that focuses on national goals as a means to increase accountability and improve transparency[1]. It is intended to improve the decision-making process through better informed planning and programming.

Increasingly, over the past two decades, transportation agencies have been utilizing "performance management"—a strategic approach that uses performance data to support decisions to help achieve desired outcomes for their multimodal transportation systems. Performance management is credited with improving project and program delivery, informing investment decision making, focusing staff on leadership's priorities, and providing greater transparency and accountability to the public.

Performance-based planning and programming (PBPP) refers to transportation agencies' application of performance management in their planning and programming processes. For MPOs, this includes a range of activities and products undertaken by a transportation agency, together with other agencies, stakeholders, and the public as part of the 3C Metropolitan Transportation Planning Process. This includes developing:

- Long-range transportation plans (LRTPs)
- Other plans and processes (including those that are federally required, such as Strategic Highway Safety Plans, Asset Management Plans, the Congestion Management Process, Transit Agency Asset Management Plans, and Transit Agency Safety Plans, as well as others that are not required)
- Programming documents, including state and metropolitan Transportation Improvement Programs (STIPs and TIPs)

The goal of PBPP is to ensure that transportation investment decisions—both long-term planning and short-term programming—are based on their ability to meet established goals.

The cornerstone of *Moving Ahead for Progress in the 21st Century's* (MAP-21) highway program transformation is this movement toward performance- and outcome-based results.

[1] http://www.fhwa.dot.gov/tpm/about/action.pdf.

States will invest resources in projects to achieve individual targets that collectively will make progress toward national goals.

The goals and objectives presented herein express the values and the spirit of the 2016 Central Mass LRTP, formally known as Mobility2040. MPO investments over the life of the Mobility2040 plan commit funding to specific projects and reserve future funding for different project types through investment programs. In reporting the benefits of specific projects, MPO staff conducted project-level assessments to determine each project's impact in advancing MPO goals through performance measures.

The goals, objectives and performance measures reflect the vision of the plan set in the earlier chapter of the plan. The objectives and the performance measures that are included in this plan helps solidify the performance based planning process for the Central Mass region. The performance measures presented is a first attempt to set measures and targets to achieve the goals and objectives of the plan. As federal and state agencies finalize the goals and performance measures, staff expects to add and update performance measures in the next few years to better align with the federal and state goals and to capture the essence of the goals and objectives presented below.

Goal 1: Reduce Congestion and Improve Mobility for all modes

Objective 1 - Coordinate Improved Incident Management (Highway & Transit).

- Facilitate group to improve incident detection & clearance time. Have 1 meeting per year.

Objective 2 - Enhanced Traveler Information (ITS).

- Facilitate the installation of information systems/kiosks at major intermodal locations, such as Union Station. 2 locations every 5 years.
- Expand I-290 ITS Real Time Traffic Management (RTTM). RTTM on I-395 and Route 146 also. Install 2 Variable Message Boards (VMB) every 5 years.

Objective 3 - Improve Corridor Management Integration.

- Increase % of overall bus trips with an on time % greater than 90% (leaving hub and end of line). 10% increase over 10 years.
- Install Transit Signal Priority – 5 signals every 5 years.
- Reduce average travel delays along identified congested major roadway segments; 2 segments every 5 years.

- Improve 2 of the top 20 congested intersections every 5 years to a LOS of "D" or better.

Objective 4 - Improved Transportation Accessibility for all modes.

- Increase the number of ADA-compliant roadways and intersections. 2 locations every 5 years.
- Improvement in the bicycle and pedestrian network within ½ mile of transit stations – for the top 10 high boarding and alighting locations. 2 locations every 5 years.
- Increase average frequency on core-routes to 10 minutes. 2 routes every 5 years.

Goal 2: Improve the Safety and Security of the region

Objective 1 - Reduce the number & rate of Fatal & Injury crashes in the region.

- Reduce number of fatalities by 10% in ten years.
- Reduce number of serious injuries by 10% in 10 years.
- Reduce rate of fatalities (fatalities per 100 million Vehicle Miles Traveled (VMT)) by 10% in 10 years.
- Reduce rate of serious injuries (serious injuries per 100 million VMT) by 10% in 10 years.

Objective 2 - Achieve Industry standards for preventable accidents for transit.

- Reduce preventable accident rate (accidents per 100,000 miles) by 10% in 5 years.

Objective 3 - Enhance Transportation Security Coordination Region wide.

- Conduct one regional workshop/tabletop exercise every year to advance Evacuation Planning.
- Continue involvement with MRPC & Statewide Evacuation Planning efforts.

Goal 3: Achieve State of Good Repair

Objective 1 - Maintain condition of on and off-system bridges.

- Decrease the number of "Structurally Deficient" bridges in the region by 10% every 10 years.
- Decrease the number of "Functionally Obsolete" bridges in the region by 10% every 10 years.

Objective 2 - Maintain the condition of the region's roadways.

- Rehabilitate 25 miles of pavement over 10 years that are in poor or failed pavement condition, including roadways that accommodate bicycle lanes.
- Improve 10% of sidewalks that are in poor or very poor condition over 10 years.

Objective 3 - Maintain fixed route and paratransit vehicles in state of good repair.

- Replace WRTA fixed route vehicles on a 12-year replacement schedule.
- Replace WRTA paratransit vehicles on a five-year replacement schedule.

Goal 4: Increase Transportation Options and Promote Healthy Modes

Objective 1 - Increase the share of transit, bicycling & walking in the region.

- Triple walk/bike/transit share in Worcester by 2040.
- Double walk/bike/transit share in urbanized areas outside of Worcester by 2040.

Objective 2 - Expand the walk/bike network in the region.

- Expand bicycle infrastructure in the region by 50 miles by 2040.
- Increase bicycle parking at public facilities in the next five years.
- Improve pedestrian network within ½ mile of the top 10 high activity transit stops.
- Identify bicycle/pedestrian/transit gaps in the region.

Objective 3 - Work with member communities to implement Complete Streets policies.

- 10% of communities in the region have a local Complete Streets policy over 10 years.

Goal 5: Reduce Greenhouse Gas and Promote Sustainable practices

Objective 1 - Encourage compact and mixed use development where possible.

- Each four year TIP will include at least one project that supports development of a regional Priority Development Area (PDA).
- Include criteria to the TIP scoring system to consider the effects of a proposed project on regional PDAs and Priority Preservation Areas (PPAs).
- Discourage capacity building at low density areas (less than 4000 persons/sq mile or 1000 jobs/sq mile).

Objective 2 – Avoid/Minimize/Mitigate Negative Environmental effects.

- All proposed projects must be included as part of all TIP Environmental screening to determine opportunities for avoidance, minimization, and mitigation of impacts.

- Identify vulnerable infrastructure susceptible to climate change now and add scoring criteria in the TIP for future years.

Objective 3 - Reduce GHGs generated by Auto and Transit in the region.

- Maintain age of transit vehicles per FTA standards (6 years for buses and 5 years or 100,000 miles for vans).
- Institute one new Park and Ride lot in each five year period for Transit & TDM along congested corridors.
- One percent VMT reduction in each 5 years period.

Goal 6: Equitable Transportation for all populations

Objective 1 - Provide access to essential services; minimize burdens and maximize benefits associated with low-income and minority areas.

- Increase the number of ADA-compliant intersections by 10% over 10 years.
- Improve traveler information at Union Station complex by installing Information Systems/Kiosks.
- Improve outreach efforts by facilitating at least one open house/community sessions across the region every year.
- Increase multimodal access to job opportunities, health care, education, recreation, healthy food and affordable housing in two EJ or vulnerable population neighborhoods in 5 years.
- Inventory the bicycle and pedestrian network within a ½ mile of the top 10 transit boarding locations in the next two years.
- Expand transit/paratransit coverage in areas that lack adequate transit service with EJ population and other vulnerable populations. 2 routes every 5 years.

Objective 2 - Consider Geographic Equity of transportation projects across the region.

- Maintain an average fleet age of 5-6 years for transit vehicles in the region.
- Equity (based on distribution of projects) in sub-regional project programming (by mode) at least one TIP project over each five year period.
- Equity for Environmental Justice identified areas (by mode). One project that benefits an EJ area over each five year period.

Goal 7: Improve Economic Vitality and Freight Movement

Objective 1 - Reduce delay along identified Freight Routes.

- Expand ITS Real Time Traffic Management (RTTM) to include identified freight routes. Install 2 VMBs every 5 years.
- Reduce average travel delays along roadway segments of major freight routes. 2 every 5 years.

Objective 2 - Increase access to major employment centers.

- Improve the bicycle and pedestrian network near 2 major employment centers every 5 years.
- Increase frequency of bus routes traveling to/from 2 identified major employment centers every 5 years.

Objective 3 - Improve Safety along Freight Routes.

- Reduce injuries and fatalities along freight routes. 10% every 10 years.

CHAPTER III

Transportation Linkages

Introduction

Mobility2040 summarizes the efforts, the accomplishments to date and the identification of future transportation needs in the region in consultation with local communities and in cooperation with public and private entities. This chapter introduces the "linkages" from the transportation planning perspective. These linkages are overarching themes that influence or are relative to the decision-making process. Since there are real financial constraints to pursue all the transportation needs in the region, the linkages act as a compass by providing thorough and thoughtful weight to the planning process.

Land Use

Transportation planning should be conducted in concert with overall land use planning. The landmark agreement by the U.S. Department of Transportation (DOT), U.S. Environmental Protection Agency (EPA), and the U.S. Department of Housing & Urban Development (HUD) reinforces the concept that the transportation system is inextricably linked to the natural and built environment, and that planning for transportation must account for impact to/from economic development, housing, and the environment.

With considerable development pressure facing the region, Central Massachusetts' land use pattern is constantly changing. Its former agricultural landscape has given way to new subdivisions, shopping centers, and industrial parks. The early pattern of development in the 1700's and 1800's also entailed the presence of manufacturing centers located on rivers and streams as a source of power for mills and factories. Around these mills sprouted self-contained villages to supply workers and the surrounding area by necessity contained farms and forests with residents engaged in production of food and crafts to meet local needs. These villages today lend each community its own distinctive character and are cherished by residents. But growth and development outside of these town centers has taken on a vastly different character. With permissive development regulations, growth has taken on characteristics of "sprawl," resulting in large lot subdivisions, strip corridor commercial development, and new residences rising as continuous frontage development along once rural country roads. Farms and forests are disappearing, impacting wildlife and natural communities, while requiring ever-increasing costly solutions for maintaining environmental quality. Slowly, the region's New England character is being replaced by a less distinctive suburban landscape.

According to the latest Massachusetts Audubon's *Losing Ground* database, prepared in 2014, the region experienced the fourth highest number of acres of land converted from agriculture and forest for development of all 14 regions of the state from the period between 2005 and 2013 (2,866 acres). At the same time, the region ranked sixth among the state's regions for the number of acres protected. In fact, the Region protected over 3.5 times as land as was developed over the 2005-2013 period (10,649 acres protected versus the 2,866 acres of new development).

Communities experiencing the highest growth in the region based on change in land cover (acres of new development) include Northborough, Shrewsbury, Grafton, and Uxbridge. Northborough, Shrewsbury and Grafton have also been in the top five in constructing new residential units, based on building permits issued in 2012 and 2013. The other two communities are Holden (#1 in each year with 132 and 188, respectively in 2012 and 2013) and Westborough.

Table III-1: State Rank of Areas of New Development

Community	Total Area (Acres)	Total Area of New Development (Acres)	New Development (Acres/Sq. Mi.)	State Rank
Northborough	11,996	185	10	8
Shrewsbury	13,924	157	7	22
Grafton	14,918	185	8	12
Worcester	24,602	185	5	77
Uxbridge	19,179	213	7	24
CMRPC Region	614,639	2,866	3	3

The influence of highways on development patterns is also clear, as much of the commercial and industrial development took place near major regional routes, including Routes 9, 12, 16, 20, 122, 122A, 140, and 146. In spite of this development, forested lands still make up 68.2% of the regional land use as of 2013. Low-density residential land uses make up the second highest use at 12.9% for the region. In Worcester, the highest percentage of land use is residential at 46% (two-thirds of residential land use are various forms of multi-family residential units), while commercial and industrial occupies 15%, according to Worcester Assessor's Office data.

Most communities in the region are conflicted about how to grow. They often agree that they don't want continuous sprawl, but worry that higher density development will ultimately increase the size of the community, with a corresponding burden on resources. They also worry that high density development will negatively impact their desire to preserve small town charm. While CMRPC sees

the general pattern and pace of greenfield[1] development to continue as a trends extended, most communities in the region are beginning to focus commercial and other large scale development on specific sites identified in the prioritization plans developed for the region. CMRPC completed the Blackstone Valley, Central 13, and Rural 11 Prioritization Plans and participated in the 495/Compact Plan completed in 2011. These plans[2] identified a number of Priority Development Areas (PDAs) and Priority Preservation Areas (PPAs) which are intended to be magnets and areas of concentration for development and redevelopment in each subregion, including where additional infrastructure investments would be targeted which were identified as Priority Infrastructure Investments or PIIs. For the purpose of this project, CMRPC staff considered it useful to divide the Central Massachusetts region into subregions corresponding to the prioritization plans completed between 2010 and 2014. The subregions include: (See Figure III-1)

1. Blackstone Valley (47 local, 29 regional, and 6 state PDAs)
2. Central 13 (69 local, 48 regional, and 10 state PDAs)
3. Rural 11 (69 local, 29 regional, and 0 state PDAs)
4. 495/Compact (55 local, 11 regional, and 8 state PDAs)

In all, there were 240 local PDAs of which a total of 117 were designated regional PDAs and 24 were state-designated. The principles underlying the prioritization projects included the following:

- Continued new growth will likely require major transportation and other infrastructure upgrades, beyond what is needed to keep existing systems in good repair.
- New commercial and residential growth must occur in a manner that is respectful of open space resources, transportation networks, and water resources in the region.
- Land use and transportation decisions must take into account the principles established by the Global Warming Solutions Act, the Clean Energy and Climate Plan, the transportation re-organization statute and GreenDOT Initiative.
- Workforce housing must continue to be produced and preserved within the region at a scale that allows the number of workers living in the region to keep pace with the number of new jobs created in the region.
- Sustainable new growth will involve the creation and maintenance of well planned-transportation networks and, where available, an effective public transit system that will coordinate with and build on existing transportation and encourage intermodal uses (mode shift).
- Coordinated planning and implementation efforts are necessary, particularly where jurisdictions and boundaries intersect.

[1] An area of agricultural or forest land, or some other undeveloped site targeted for potential uses like residential, commercial or industrial development.
[2] Find links to all Prioritization Plan and resources at: http://www.cmrpc.org/community-development-documents

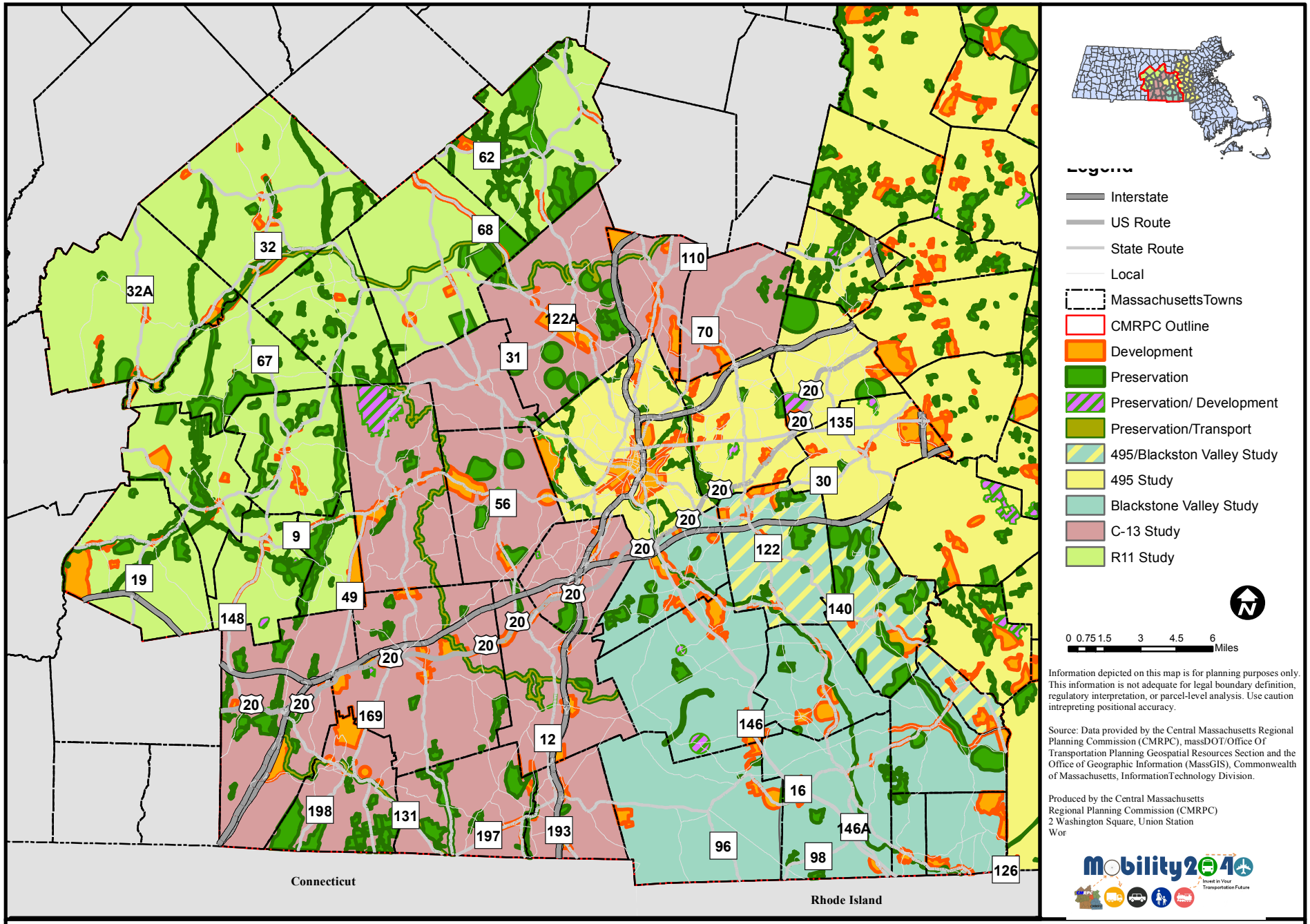


Figure III-1: CMRPC Prioritization Plans

Planning, both locally and regionally, must continue to work to protect open space (facilitated by the PPA designated sites) and consider sustainable growth patterns of development when making land use decisions. Priority Development Areas, in many cases, are existing town centers that communities are seeking to revitalize. These preexisting developed areas are ideal to align with the stated principles of prioritization planning. Focusing on these areas will result in more compact development patterns than has been the norm over the past 60 years. While Priority Preservation Areas are not necessarily protected, their designation will provide local officials with specific targets for preservation and conservation efforts and thus may further steer development into PDAs and other areas of potential development and redevelopment. CMRPC plans to update and coordinate the different prioritization plans in a comprehensive regional plan scheduled to begin work in the future.

Overall, we anticipate that while PDAs may become a greater focus for development in Central Massachusetts communities, we still expect that communities experiencing the greatest growth pressures are still those most likely to see development both in PDAs and in other locations. The exception to this is the City of Worcester where buildout is nearly completed and a recent resurgence in interest in redevelopment has occurred. This is occurring at the same time as demand for urban living is occurring on a national basis, and is having an effect on downtown Worcester development.

The impact of these land use development trends will likely be continued pressure on major and minor arterials to get generally sprawling commuters to more concentrated employment locations. The region has seen high growth on its major arterials over the past decade and that trend is likely to continue into the foreseeable future, absent more communities in addition to Worcester embracing more dense residential development. While millennials nationwide are trending to more urban environments, the effect of this trend is much softer in this region than in the Boston region where there is tremendously more attractiveness in terms of the urban offerings. That said, Worcester is reaping some benefits of this trend and that will continue at a moderate pace into the future.

Access Management

Policy Background

The Federal Highway Administration defines access management as “the systematic control of the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway. It involves roadway design applications, such as median treatments and auxiliary lanes, and the appropriate spacing of traffic signals.” In practical terms, it means managing the number of driveways that a vehicle may encounter without hampering reasonable access to a property and removing slower, turning vehicles from the arterial as

efficiently as possible. Access Management focuses on both short term and long term improvements.

A safe and efficient transportation system is an important element of a local commercial area. Individual business owners sometimes express concern regarding the potential impact of access management requirements on commercial activity. However, studies conducted of businesses within areas where access management has been implemented show that improved access has virtually no adverse impact on business activity.

Access Management Strategies can be useful components of transportation plans, often providing multiple benefits to communities that choose to include the strategies in their plan of development. These strategies can be used to improve the overall safety, capacity, and appearance of a corridor. The Massachusetts Department of Transportation (MassDOT) states that the object of Access Management is to ensure roadway safety and efficient operations while providing reasonable access to the adjacent land uses. Access Management can also improve the environment for pedestrians, bicycles, and motor vehicles in all settings and on all roadway types by reducing and consolidating driveway conflict points. Additionally, access management techniques can be used to foster economic development or redevelopment in an area.

By managing the number and spacing of driveways along a corridor, without restricting access to property unreasonably, access management can remove slower, turning vehicles from roadways with heavy traffic movement. Access management can provide for safe and efficient traffic flow, helping to negate some of the problems caused by driveways and turns associated with suburban-style strip development.

The intent of an access management plan is to evaluate the ability of transportation system users to safely access the existing or proposed land uses from the roadway and/or from adjacent parcels. Multimodal planning guidelines and recommended standards can be developed to help ensure that communities and other regulating authorities consider both internal and external vehicle, transit, bicycle, and pedestrian access in the planning, design, permitting and project approval stages.

Performance Management

Mobility2040 has a number of overarching goals that relate to Access Management. Reducing congestion and improving mobility, reducing Greenhouse Gas and promoting sustainable practices, and improving economic vitality and freight movement are three goals that Access Management can play a role in achieving.

Accomplishments

In FY 2008, Central Massachusetts Regional Planning Commission (CMRPC) and the CMMPO staff began to develop access management and land use planning strategies that would assist communities in managing land adjacent to roadways in order to provide for safe and efficient internal and external access for motorists, transit users, bicycle riders, and pedestrians. Staff examined three corridor development scenarios along "vital links," as identified in the 2012 Long Range Transportation Plan, within the region:

- Near build-out conditions of primarily commercial/retail development (MA-9 Westborough)
- Medium-density development with residential and commercial land uses (MA-122A Holden)
- Under-utilized developable land identified as a future growth area (MA-140 Boylston)

For each of these scenarios, staff evaluated the ability to safely access the existing or proposed land uses from the roadway and/or from adjacent parcels. In addition, staff evaluated site design standards currently in place and their ability to provide for efficient vehicle, transit, bicycle, and pedestrian movement. This task has been developed as a multimodal planning effort. Copies of the resulting reports can be found on the CMRPC website.

Planning Ahead

Guidelines and recommended standards have been developed to help ensure that communities and other regulating authorities consider both internal and external vehicle, transit, bicycle, and pedestrian access in the planning, design, permitting, and project approval stages. In 2014, staff developed an Access Management Toolkit that can be used by local municipalities and development agents as a guide for smart development. In addition, staff will be cognizant of Access Management techniques when assisting municipalities in their Transportation Improvement Program (TIP) project development.

Economic Development

The Central Mass region today is an area in transition with regard to economic development, closely linked to the fortunes of Massachusetts but struggling to chart its own course. The boom period of the 1990s gave way to a series of recessions in the 2000s that have stubbornly refused to abate, at least in terms of new job creation. Between 2000 and 2010, employment in the region declined 3%, due to the recession, following a trend in Massachusetts as a whole.

Population growth in the region was more robust than in most areas of the state, due in part to housing prices pushing more people westward and the high overall quality of life factors found in the region. Despite CMRPC projections for healthy future growth, particularly employment growth, the projected rates of growth may not be achieved if the growth of the remainder of the state stalls or declines. This has serious implications for both the state and the region. There are certainly some hopeful signs for improvement, but it will take a concerted and cooperative effort by the communities of Central Massachusetts to provide a brighter future for their residents. A summary of economic conditions and trends is provided below:

- In 2000 the Central Massachusetts Region was home to approximately 245,000 jobs, about 7% of the jobs in Massachusetts. This number has decreased to 224,000 in 2010, and in 2040 the region is expected to host 250,000 jobs, about 7.3% of the total jobs in Massachusetts. This trend seems to be on par with historical data.

- Due to the recent economic recession many economists predict that it will be several years, perhaps between 2017 and 2020, before employment numbers climb back to the 2005 levels.

- Four (4) industries represent nearly 50% of all employment in the region: Health Care, Education, Retail, and Manufacturing[3] with a combined employment of over 125,000. However, the employment sectors with the highest annual wages are not in that group of sectors: Utilities and Management of Companies have annual wages in excess of $110,000. The regional average annual wage in 2010 was $48,332. While Education employment is often more local to the commuter's home base, Retail, Manufacturing, and Health Care are generally congregated in areas farther away from housing, and require more travel. The WRTA system effectively serves these industries, but only from denser population clusters. Because this region is affected by past and present sprawl, it's safe to assume that auto travel will continue to increase, even as transit ridership increases.

- Not surprisingly, the extreme effects of the recent economic recession were quite visible in the employment statistics in the CMRPC region in recent years. While Worcester County fared better than the nation, it did not always track better than the state. Between 2002 and 2008, Worcester County had a higher unemployment rate than both the state and the nation. In 2009 to 2011, the unemployment rate in the region was lower than the nation, but still higher than the state by more than one-half of one percent. As of July 2014, Worcester

[3] North American Industry Classification system (NAICS): http://www.census.gov/epcd/www/naics.html

County's unemployment rate was 0.8% percentage points higher than the state (6.9% versus 6.1%).

- Although at no time during the recession did the region's unemployment rate reach double-digits, it did in several communities however. In 2009 and 2010, ten (10) communities had an unemployment rate of over 10%, but by July 2014 no communities were over 10%. The community that was noted to be over 10% at the end of 2011, Southbridge at 10.1%, has dropped two full percentage points between December 2011 and July 2014, from 10.1% to 8.1%. Unfortunately, Southbridge had the highest unemployment rate of any of CMRPC's communities in July 2014, slightly ahead of the City of Worcester (8.0%).

- By contrast, several communities in the region had considerably lower unemployment rates, with a couple at less than 5% as of July 2014. No community's unemployment rate had increased in 2011, providing some signs at that time that the economy was moving in a more positive direction. However between 2012 and 2013, thirty-one (31) of the forty (40) CMRPC communities experienced an increase in unemployment, with three (3) communities experiencing a 1% increase. The other communities increase was all less than 1% percent. The good news is that by July 2014 only one community's unemployment had increased over the 2013 rate.

- One of the greatest advantages that Central Massachusetts and the state has is the presence of a highly educated workforce. In 1990, 2000, and 2008 no state (except the District of Columbia) had a larger percentage of its over 25-year old population with Bachelor's degrees or higher (38.1% in 2008, according to the US Census). In 2008 Massachusetts had 16.4% of its over 25-year old population with advanced degrees, again second only to the District of Columbia.

Historically the region was a center for agriculture, manufacturing, and education. In recent years both agricultural and manufacturing activity has declined significantly, although still important to the local economy. New, high-tech and biotech firms have come to the region, taking advantage of the well-educated workforce. In addition, healthcare systems are also significant employers. In the manufacturing sector, most new manufacturing jobs are in the advanced manufacturing realm[4].

[4] According to the President's Council of Advisors on Science and Technology Report to the President on Ensuring American Leadership in Advanced Manufacturing: Advanced Manufacturing is "a family of activities that (a) depend on the use and coordination of information, automation, computation, software, sensing, and networking, and/or (b) make use of cutting edge materials and emerging capabilities enabled by the physical and biological sciences, for example nanotechnology, chemistry, and biology. This involves both new ways to manufacture existing products, and especially

Most people of working age would prefer a good-paying job that is satisfying and secure, but as the nature of the economy evolves, changes in the makeup of employment will occur. The better jobs in the future will require a technically skilled and knowledgeable workforce and part of this responsibility lies with the community. Results from a survey of 50 North Central Massachusetts manufacturers, released by the Massachusetts Manufacturing Extension Partnership in the summer of 2014, points to the lack of an adequate trained workforce, especially for advanced manufacturing. Thirty-four of the companies said workforce issues are a challenge, with 18 citing a lack of trained, skilled workers and 11 saying low ability levels and a lack of interest in manufacturing among high school graduates create problems. The Commonwealth of Massachusetts has been trying to promote advanced manufacturing through its Advanced Manufacturing Collaborative, realizing that manufacturing jobs tend have higher annual incomes than most people perceive. However, there are capacity limitations within the state's technical schools that currently limit the amount of new students each fall.

While many of the workers in Central Massachusetts work in the town where they live or in a town nearby, an increasing number commute to jobs outside the region, placing an increasing burden on an aging transportation system.

Environmental Consultation Overview

Generally, a discussion consists of potential environmental mitigation activities and potential areas to carry out these activities. These efforts could also have the greatest potential to restore and maintain the environmental functions affected by LRTP as well as projects programmed on the region's TIP. The discussion shall be developed via consultation with federal, state, and tribal land management, wildlife, and regulatory agencies.

"Consultation" means that one or more parties confer with other identified parties in accordance with an established process and, prior to taking action(s), considers the views of the other parties and periodically informs them about action(s) taken. "Environmental mitigation activities" means strategies, policies, programs, actions, and activities that, over time, will serve to avoid, minimize, or compensate for (by replacing or providing substitute resources) the impacts to or disruption of elements of the human and natural environment associated with the implementation of the LRTP Mobility2040.

The human and natural environment includes, for example, neighborhoods and communities, homes and businesses, cultural resources, parks and recreation areas, wetlands and water sources,

the manufacture of new products emerging from new advanced technologies." From http://manufacturing.gov/whatis_am.html

forested and other natural areas, agricultural areas, endangered and threatened species, and the ambient air. The environmental mitigation strategies and activities are intended to be regional in scope.

Further, the MPO shall consult, as appropriate, with state and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation concerning the development of the LRTP. The consultation shall involve, as appropriate:

- Comparison of transportation plans with State conservation plans or maps, if available; or
- Comparison of transportation plans to inventories of natural or historic resources, if available.

Annual CMMPO Environmental Consultation Meeting

Annual Environmental Consultation Meeting was held 4/15/15 as an integral part of the concurrent CMMPO LRTP and TIP development efforts. The meetings are an opportunity to forge long-term relationships with various federal, state and local environmental stakeholders. These annual meetings have been held by the CMMPO since 2007. Staff conducts broad outreach to the environmental community and other interested stakeholders including:

- John H. Chaffee Blackstone River Valley National Heritage Corridor Commission (JHCBRVNHCC)
- Massachusetts Audubon Society
- Massachusetts Department of Conservation & Recreation (DCR)
- Massachusetts Department of Environmental Protection (DEP)
- Massachusetts Water Resources Authority (MWRA)
- Regional Environmental Council (REC)

Notably, past meeting participants have included the US Environmental Protection Agency (EPA), Conservation Law Foundation (CLF), Providence & Worcester Railroad (P&W RR), UMass-Amherst Stream continuity expert and commercial drainage pipe vendors.

The April 2015 Environmental Consultation Meeting was attended by staff from the Massachusetts Department of Environmental Protection (DEP), Town of Dudley Trails & Greenways Committee, the 495/MetroWest Partnership, a number of community engineers and planners as well as private consulting engineers. Agenda items for the 2015 meeting included the development of Mobility2040 and the CMMPO TIP, the use of GIS-based Environmental Profile Maps as well as regional efforts to measure the Greenhouse Gas (GHG) reduction

potential of all projects reflected in the LRTP and programmed on the CMMPO TIP. *A PowerPoint presentation from the 2015 Environmental Consultation session is included in the LRTP's Technical Appendix.*

Environmental Profile Maps

The region contains a wide variety of natural features and resources. Transportation improvement projects often cross or are situated near environmentally sensitive areas. Transportation infrastructure poses a measurable impact on the natural environment, by affecting changes to:

- Forest fragmentation
- High levels of noise
- Impacts to water quality (contaminated runoff)
- Increased air pollution
- Land cover

As part of the regional planning process, MAP-21 guidelines encourage early consultation with host communities to address the environmental challenges associated with transportation improvement projects. Early assessment of existing conditions provides the opportunity for environmental agencies to discuss potential mitigation activities during the preliminary planning process, seeking avoidance or minimization of anticipated of impacts.

The compilation of "Environmental Profile Maps" on the regional level is simply an early indication of benefits and challenges associated with a particular transportation improvement project. Other established formal environmental processes through federal NEPA and state MEPA must often be followed. The compilation of Environmental Profile Maps occurs at the very early stages of project conception. It should be noted that the CMMPO is not a permitting entity, it relies on MassDOT to enforce environmental compliance when planning and constructing improvement projects.

Regional efforts to compile Environmental Profile Maps for the areas in proximity to transportation improvement projects are based on MassGIS spatial data, which visually depicts key information. The screening conducted by the CMMPO as part of early Environmental Consultation efforts is based on the detailed expertise of other regulatory agencies, specifically Mass DEP, Mass DCR and National Heritage & Endangered Species Program (NHESP). Data in these Geographic information Systems (GIS) layers identify:

- Conservation lands

- Cultural features
- Highly sensitive avoidance areas
- Recreation areas
- Water supply protection areas
- Wildlife habitat for endangered & protected species

Environmental Profile Maps provide detail of the environmental features within a ½ mile buffer zone of a proposed transportation project. This regional ecosystem approach allows for the identification of areas susceptible to possible impacts and assists in the consideration of context sensitive solutions for mitigation of impacts. This effort focuses on identifying various environmental systems, an example being a system of streams and connecting waterways, as opposed to simply looking at only where a single stream crosses under a roadway. *A detailed list of the MassGIS layers, parent agencies and data sets used for the region's early Environmental Consultation are included in the LRTP Technical Appendix.*

The CMMPO has been refining this effort to identify Planning and Environment Linkages (PEL) in the region by participating in the FHWA's PEL initiative to identify sensitive subareas in the region in consultation with federal, state, and local agencies. The CMMPO intends to continue working with applicable environmental agencies and other interested stakeholders, seeking to improve early environmental consultation procedures to helping to meet the planning region's overall conservation efforts.

Brownfields

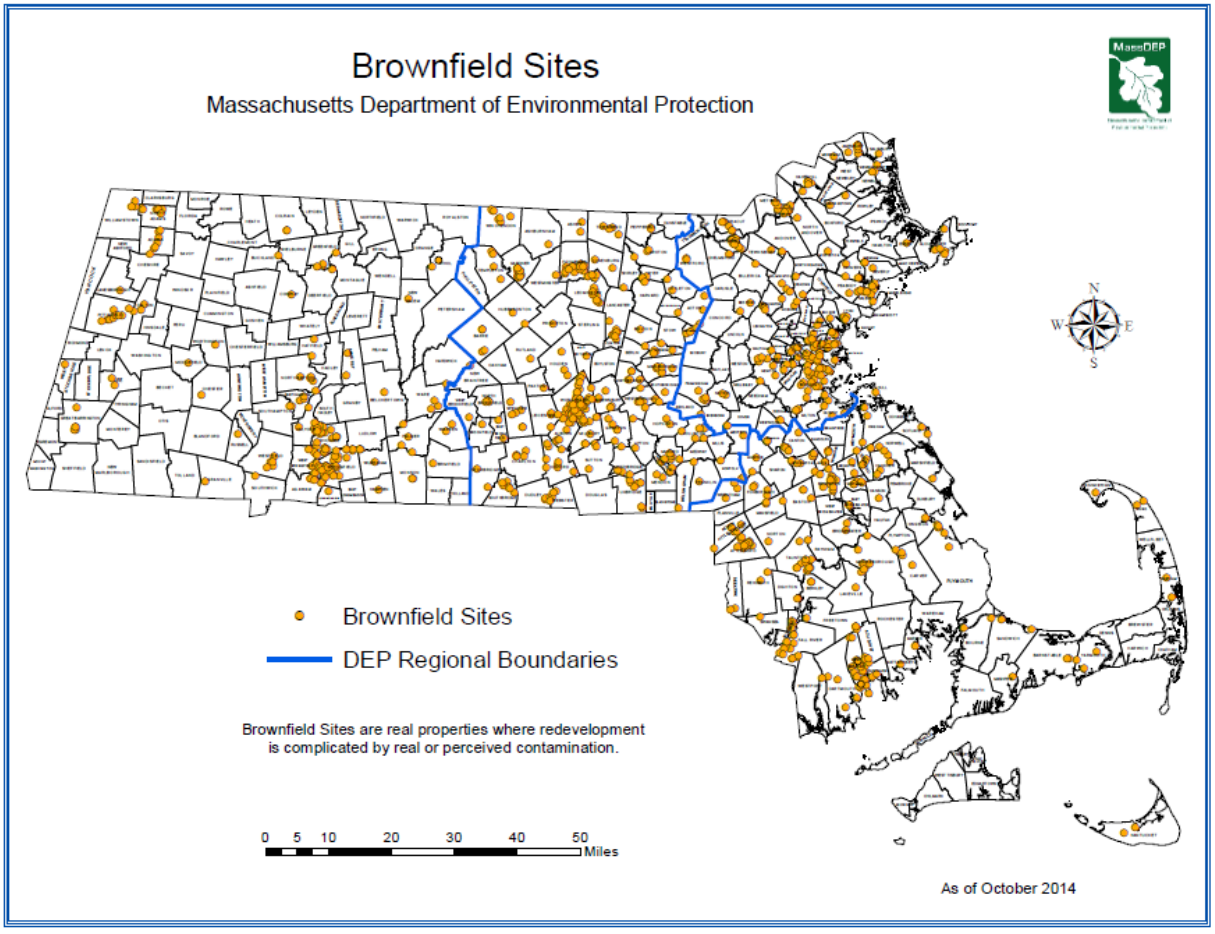
The presence or potential presence of a hazardous substance, pollutant, or contaminant can have possible impacts to human health and the environment. Most of the time, brownfields, or polluted properties could be cleaned up to support certain uses. This can be crucial to limit sprawl and spur redevelopment in derelict areas.

Under the previous governor's administration, a multi-agency MA Brownfields Support Team (BST) was created to identify and provide technical assistance and funds for brownfields clean-ups. The South Worcester Industrial Park (SWIP) and the Fisherville Mill in the Town of Grafton were both included for assistance in the BST round of projects. The SWIP is located in an Environmental Justice area and the use of the properties included foundry, cast metal manufacturing, and auto salvage. Underground storage tanks were removed and Gardner Street was extended. The parcels will be suitable for light industrial and manufacturing use. The SWIP property is located along a heavy freight corridor which is the subject of an ongoing effort to review Management Systems data (i.e. safety, congestions, pavement, etc) to determine potential

improvements that can be made. In the case of Grafton, the Fisherville Mill property is located along the Blackstone River. The 35-acre property had oil contamination, mostly from a fuel oil-laden canal that runs through the property. Remediation was completed and oil-contaminated sediments were dredged from the canal. Also a containment structure was built on the property. Given the fact the canal is open, a greenhouse and floating platforms were added as a stormwater control measure. The 13-acre park is open to the public and allows public access to the Blackstone River.

In the region, there are more properties identified as brownfields and under MassDEP or EPA oversight. See Figure III-2.

Figure III-2: MassDEP Brownfield Sites



Source: http://www.mass.gov/eea/docs/dep/cleanup/bfmap1014.pdf

A more recent opportunity for brownfield redevelopment in the region is the WRTA Maintenance and Operations Facility site, formerly an NStar gas plant in Quinsigamond Avenue,

Worcester, MA. Before formal construction started, the 11-acre lot required the removal of 45,000 cubic yards of contaminated soil. An investment of $15 million dollars was necessary for the environmental cleanup and enhancements in the property. This property is also close to the SWIP development noted above. Both of these corridors are considered gateways into the City. The road system is functioning fairly well, but improvements have been and are being identified that will enhance the functioning. Recent and planned improvements include on-road bicycle accommodations along these corridors. These brownfield redevelopment sites are excellent examples of using the existing infrastructure to spur economic development.

Oil spills from transportation-related operations also represent a source of pollution. As a result, MassDEP has a Leaking Underground Storage Tank Release Prevention Program to provide technical assistance and guidance to storage tank owners and operators.

In the region there is only one active superfund site included in the EPA National Priorities List.[5] The 23-acre site is located in Westborough, between Otis Street, Hocomonco Pond, and the Smith Valve Parkway. The site, used in the past for wood-treating and preservation operation, has restricted access and annual monitoring is conducted to ensure long-term protection of human health and the environment.[6] Even though the pollutants are not transportation-related, it does deprive the public access.

Sustainable Transportation, Smart Growth, and Livable Communities

Policy Background

Sustainable Transportation

Sustainable transportation provides exceptional mobility and access to meet development needs without compromising the quality of life of future generations. A sustainable transportation system is safe, healthy and affordable, provides transportation choices, make use of renewable resources while reducing emissions and minimizing short and long term environmental impacts. It is a multigenerational approach which meets the needs of the present without sacrificing the resources in the future, while maintaining or improving the environment. It also considers the long-term economic health and equity of a community. In transportation planning, it translates to addressing environmental management systems, to using funds effectively, to guaranteeing a long life-span of projects through high quality construction standards and to being sensitive to community and environmental needs.

[5] http://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0100751
[6] http://www.epa.gov/region1/superfund/sites/hocomonco/559782.pdf

The sustainability approach focuses on three interrelated and sometimes conflicting main areas: environment, economy and community. This triad is so important that the Federal Highway Administration (FHWA) promotes the Sustainable Highway Initiative to improve sustainability in the Nation's roadway network. As part of this initiative, the FHWA had released a scoring tool known as INVEST, the acronym for "Infrastructure Voluntary Evaluation Sustainability Tool", which is intended to assist the state's and local agencies' decision making process by introducing sustainability best practices as the new standard into highway and roadway projects.

The Commonwealth of Massachusetts has been a promoter of sustainability for several years. Moreover, MassDOT sustainability vision for the Commonwealth's transportation system is laid out in GreenDOT. The vision encompasses all modes and all projects phases, from planning to design, construction and operations. GreenDOT's three main goals are: (1) to reduce Greenhouse Gas (GHG) emissions; (2) to promote healthy transportation options, like walking, bicycling and public transportation; and (3) to support "Smart Growth" development.

Smart Growth, Livable Communities and Quality of Life

Most often sustainability and livability are used as synonyms. Even though they are essentially rooted in improving overall quality of life, they are in fact very distinct planning approaches. Present transportation planning efforts are intrinsically defined by both. Sustainability as aforementioned is a multigenerational approach based in the interrelationship of the environment, economy and community. Livability, on the other hand, is about partnerships focused in achieving broader community goals such as access to jobs, affordable housing, quality schools and safer streets. There's no strict recipe for the type of partners, strategies or initiatives, which allows planning agencies to wade through a different array of strategies depending on local characteristics, invested stakeholders, fiscal realities and political climate, and other factors.

Livable transportation strategically connects all modes: bikeways, pedestrian facilities, transit services and roadways into an intermodal and interconnected system. These strategic connections are dependent on land use policies. Smart Growth is in essence a land use planning approach that promotes higher densities and mix of uses and activities as a way to reduce traffic congestion, preserve natural areas, avoid environmental degradation, promote economic development and refrain from predatory sprawl. Sustainability lies at the heart of Smart Growth theory and livability principles.

In 2009, the U.S. DOT recognizing the role of the transportation sector in achieving Smart Growth, announced an Interagency Partnership for Sustainable Communities. The partnership members are DOT, EPA, and HUD. The partnership established six interagency livability

principles: (1) provide more transportation choices; (2) promote equitable, affordable housing; (3) enhance economic competitiveness; (4) support existing communities; (5) coordinate policies and leverage investment; and (6) value communities and neighborhoods. In transportation planning, livability translates to addressing road safety and capacity issues, maximizing and expanding new technologies such as ITS, developing fast, frequent and dependable public transportation, integrating health and community design considerations as well as maximizing the use of Transportation Demand Management (TDM) measures.

At the state level, Smart Growth is one of GreenDOT key goals. Since GreenDOT implementation, MassDOT has worked with other state agencies on programs that support land development projects through the Massachusetts Environmental Policy Act (MEPA) permitting process. Another example is the Planning Ahead for Growth Program, in which MassDOT worked directly with the Executive Office of Housing and Economic Development (EOHED), and local agencies and officials to identify potential areas for growth and preservation. To further MassDOT's GreenDOT Implementation Plan, the Commonwealth's Healthy Transportation Compact and statewide Mode Shift Goal, *the Healthy Transportation Policy Directive* was issued in September of 2013 to ensure that all MassDOT projects are designed and implemented in a way that all network users have access to safe and comfortable healthy transportation options at all MassDOT related facilities and in all services provided.

Performance Management

Sustainability is at the forefront of Mobility2040. Even though the goals included in Mobility 2040 represent a concerted effort to achieve sustainability and livability goals, in this section the following performance measures are predominantly addressed:

- Each four year TIP will include at least one project that supports development of a regional PDA.
- Include criteria to the TIP scoring system to consider the effects of proposed projects on regional PDAs and PPAs.
- Discourage capacity building in low density areas (less than 4,000 persons per square mile or 1,000 jobs per square mile.
- All proposed projects must be included as part of a TIP Environmental Analysis and consultation processes.

Accomplishments

In an effort to avoid environmental impacts, the CMMPO references maps using MassGIS datalayers to identify environmental features within a mile of all TIP projects. The early identification of possible environmental impacts has become a standard procedure in the TIP development process and overall readiness for funding. Also, the CMMPO facilitates an Environmental Consultation Session on projects included in the TIP. The consultation sessions have proven to be an effective way to bring partners to the table to discuss best practices, new methodologies or tools to improve impact analyses and the identification of avoidance / minimization / mitigation alternatives.

Related to Smart Growth in the region, the CMRPC worked on several planning efforts for the CMMPO sub-regions in coordination with local officials, stakeholders and general public in the identification of Priority Development Areas (PDA) and Priority Preservation Areas (PPA), and priority infrastructure needs (including transportation infrastructure) within the region. Also, CMMPO staff provided comments on major development projects and infrastructure improvements consistent with GreenDOT's policy directive. An extensive effort has been placed in increasing the healthy, active transportation modes for "last mile trips". In that regard, the recently inaugurated WRTA Transit Hub and the opening of the Front Street segment from Front Street to Worcester Common has improved accessibility and transit connectivity to Downtown Worcester and the region, showing the synergy of several partners working in tandem for the livability overarching goal.

In relation to livability in the TIP, the CMMPO developed a draft TIP livability scoring criteria that proved useful in evaluating potential 2016-2019 TIP project candidates. Also, the CMMPO has been involved with several livability-related projects and initiatives, including Safe Routes to School Activities, Neighborhood SAFE and "Complete Streets", among other initiatives.

Planning Ahead

The CMMPO is applying FHWA's INVEST tool and identifying possible uses during the TIP development process. The CMMPO is charged with promoting sustainability in every transportation project that goes through the annual selection process. Special attention is placed on those projects where sensitive environmental areas had been previously identified. The CMMPO will continue annual Environmental Consultation Sessions as part of the TIP development process. In addition, the CMMPO will continue to work on the following projects and initiatives:

Safe Routes to School (SRTS) Activities

The Massachusetts Safe Routes to School program promotes healthy, active transportation modes for children and their parents in their travel to and from school. It educates students, parents and community members on the benefits of walking and bicycling for travel to and from school. Over the past two years, CMMPO staff has worked with Walk Bike Worcester on a pilot program for Safe Routes to School in the Worcester Public School System. This work is an integral part of the livability program for the CMMPO; it has a multimodal focus on the safety of schoolchildren in the City of Worcester.

Upcoming Safe Routes to School Taskforce efforts will include working with Woodland Academy/Claremont Academy in the City of Worcester. This unique school is housed in a single building, allowing for the integration of efforts across elementary and middle school levels. Special focus will be paid to incorporating student participation into the development of the project.

Neighborhood SAFE

Neighborhood SAFE is a new, proactive approach that the CMMPO is undertaking in order to provide communities with small area infrastructure assessments from a pedestrian and bicyclist safety perspective. The CMMPO has launched this effort to achieve the following objectives:

- Increase awareness of walkability in communities throughout the region
- Identify safety issues that pedestrians and bicyclists face
- Provide neighborhood safety analysis for all users of the transportation system
- Generate enthusiasm for healthy, active modes of travel

CMRPC is always looking for new communities to incorporate into Neighborhood SAFE. Upcoming work in this program will include a review of the Westborough Rotary area in the Town Center. Staff is optimistic that further studies will result from the development of the Regional Bicycle & Pedestrian Plan due in 2016.

Complete Streets

Through ongoing efforts with Walk Bike Worcester, the Safe Routes to School Taskforce, and Neighborhood SAFE, CMMPO staff has been working toward the incorporation of Complete Streets policies and techniques in all Transportation Planning products and initiatives.

Cross-collaboration with the Land Use staff of CMRPC is currently underway to achieve the Mobility2040 goal of 10% of the communities in the region adopting a Complete Streets policy within the next ten years.

Healthy, Active Transportation

Policy Background

Achieving major livability goals and healthier communities requires a transportation policy progressive enough to include health as a vital component. The focus on vehicle travel in transportation policy throughout the years has had a detrimental spillover effect on community health. Research shows that obesity, cardiovascular diseases, diabetes and other chronic health conditions can be associated with lack of physical activity. The Massachusetts Behavioral Risk Factor Surveillance Survey (BRFSS) 2008-2011 estimates that 61% of adults in the City of Worcester were overweight or obese, compared to 59% of Massachusetts adults, and lowest income residents in Worcester County had the highest prevalence of overweight (72%) and obesity (33%) in 2010.

Moreover, higher rates of asthma and other respiratory conditions can be found in locations with poor air quality that can be traced to Greenhouse Gas emissions. According to BRFSS, 11% of persons aged 18 and older in Worcester County have asthma. In Worcester County, Hispanics have the highest prevalence, followed by non-Hispanic Whites.

Injuries and fatalities as a result of crashes are also health effects related to transportation. Data from the Fatality Analysis Reporting System (FARS) show that fatalities as a result of a motor vehicle crash decrease 22% during the period from 2007 to 2011. Moreover, the fatality rate by a hundred million vehicle miles traveled (VMT) in 2011 was 0.62. Interestingly, in rural areas the rate was higher than urban areas, 1.10 versus 0.57. The percent of pedestrian fatalities in Massachusetts in 2011 was 17%, higher than the U.S. Bicyclists fatalities were 1%, whereas in the U.S. the proportion was 2% of all fatalities.

The Center for Disease Control and Prevention believes the topic is of major significance, and issued the report “Recommendations for Improving Health through Transportation Policy”. Key highlights in the report include the following: (1) reduce injuries associated with motor crashes; (2) improve air quality; (3) expand public transportation; (4) promote active transportation; (5) encourage healthy community design; (6) design to minimize adverse health effects and safety consequences, among others. Furthermore, the U.S. Department of Health and Human Services recommends using the Health Impact Assessments (HIA) as a planning tool to identify the impact of a new policy, program or major transportation project on community and individual health.

The Commonwealth of Massachusetts has been a national pioneer incorporating health into transportation policy. The Massachusetts Healthy Transportation Compact (HTC) was a key requirement of the landmark transportation reform legislation signed into state law in June 2009

and is an inter-agency initiative designed to facilitate transportation decisions that balance the needs of all transportation users, expand mobility, improve public health, support a cleaner environment and create stronger communities. In December 2013, MassDOT released the Healthy Transportation Policy Directive to include design directives to promote healthy design guidelines and active transportation modes as included in GreenDOT.

Moreover, a HTC Advisory Council was formed to help coordinate the activities of the Compact. The HTC-AC identified five areas to focus moving forward: (1) help inform the Project Selection Advisory Council in health related topics; (2) prioritize asset planning as included in WeMove Massachusetts capital planning process; (3) develop guidance to consultants on how to incorporate health analysis in their projects; (4) enforce Complete Streets and Active Streets legislation and municipal training; and (5) assist new administration in capitalizing on progress achieved and continue with initiatives already in place.

Also, the HTC worked on two HIA's on major transportation projects. The first one was the Grounding McGrath HIA, which became the example to follow on future transportation HIA's, and in May 2014 an HIA for the Logan Airport was completed to investigate the association of airport noise and emissions with adverse health outcomes.

In January 2009, Massachusetts launched the Mass in Motion project which aims to promote wellness and to prevent overweight and obesity in Massachusetts with a particular focus on the importance of healthy eating and physical activity. Mass in Motion provides grant funding to cities and towns in the state to make wellness initiatives a priority. In the CMMPO region, the City of Worcester was that grantee. The project team included state and local departments of public health, public and private health care providers, health researchers, city, regional and state transportation staff (including CMRPC), economic development staff, and local non-profit organizations. The project is a multi-year partnership to address overweight, obesity and chronic disease through access to healthy food and physical activity opportunities at the local level.

Performance Management

Mobility2040 has set the goal to "***Increase Transportation Options and Promote Healthy Modes***." As such, the following performance measures are of particular importance for the CMMPO:

- 10% of communities in the region have a local Complete Streets policy over 10 years.
- Expand bicycle infrastructure in the region by 50 miles by 2040.
- Increase bicycle parking at public facilities in the next five years.

- Improve pedestrian network within ½ mile of high activity transit stops.

Accomplishments

A result of the aforementioned partnership was the publication of the Greater Worcester Region Community Health Improvement Plan (CHIP). The CMMPO is actively working in the implementation of several strategies included in the CHIP, especially those in the area of Healthy Eating and Active Living. The strategies in which the CMMPO had been involved are the following: (1) increase the consideration of pedestrian and bicycle accommodation in routine decision-making through the adoption of Complete Streets transportation policy throughout the region. (2) establish four joint use agreements with schools in low-income neighborhoods to allow the use of both indoor and outdoor facilities by the public during non-school hours on a regular basis. (3) establish a district wide Safe Routes to School task force for ongoing identification and implementation of systems, policies and school-level changes to support increased walking and biking to school.

Also, the CMMPO participated in the development of Union Hill's Health Impact Assessment (HIA) Report, an effort lead by the City of Worcester Division of Public Health and funded by the Massachusetts Department of Public Health to assess the health effects of a future neighborhood's revitalization. The Union Hill neighborhood experiences higher crash rates, especially involving pedestrians, and higher rates of pedestrian injury than the city as a whole, for which the implementation of a Complete Streets program was recommended to guide street and sidewalk investments in the neighborhood.

More recently, the staff participated in a statewide Health Impact Assessment Workshop for regional planning staff facilitated by the Healthy Community Design Initiative, the Massachusetts Department of Public Health and the Metropolitan Area Planning Council. In addition, Regional Transportation Managers received a presentation about the Grounding McGrath Highway (Route 28 including McCarthy Overpass in Somerville) Health Impact Assessment as part of their monthly working meetings.

The CMMPO worked with Mass in Motion in the identification of transit stops close to "Corner Stores", an initiative developed to assist store owners sourcing local produce. Also the Worcester Regional Transit Authority (WRTA) has been a supporter for more access to healthier foods and active living. This summer the Regional Environmental Council Mobile Market had a spot at the WRTA Hub, the City of Worcester DPH held a vaccination clinic at the WRTA Hub as part of the flu season awareness program, and the TV screens at the WRTA Hub lobby present

informational slides with parks, and places to hike and bike located at walking distance to WRTA stops.

Planning Ahead

Health is definitely an area that will shape transportation policy in the immediate future. MassDOT is already working on how to incorporate health in the transportation planning process, from corridor planning to funding and final permitting. Most likely consultants will have the biggest share in terms of developing reports and studies, but there is a growing consensus that transportation agencies should lead some efforts, like HIA's for those projects with a large impact on the community. Not every TIP project will be a candidate for a HIA. As such, MassDOT is developing guidelines to assist regional and local officials in the evaluation of transportation projects.

The CMMPO will continue to work on the CHIP implementation and will provide support to initiatives related to transportation that improves the health of the region's population, especially those that are centered in improving and expanding the pedestrian and bicycle infrastructure in the region. The work done so far has helped to strengthen the organization's network with the City Division of Public Health, local non-profits, service providers and the community at large, expanding the CMMPO's stakeholder base.

The CMMPO foresees more staff training in the future related to these matters since it is an evolving topic. As standard procedure, the CMMPO will continue analyzing regional and local data through our local partners. Particular attention will be placed in education and information sessions as a way to reduce fatalities and serious injuries.

Climate Change

Policy Background

Greenhouse Gases (GHG) are considered to be detrimental to overall air quality due to their long-term effects. There is broad scientific consensus that our climate is likely changing both regionally and globally and a growing concern that this may largely be due to the combustion of fossil fuels and other human activities that increase atmospheric concentrations of Greenhouse Gases, including the following: Carbon dioxide (CO2), Methane (CH4), Nitrous oxide (N2O), and other heat-trapping gases. These gases form a "blanket" of pollution that traps heat in the atmosphere that may cause climate instability characterized by severe weather events such as

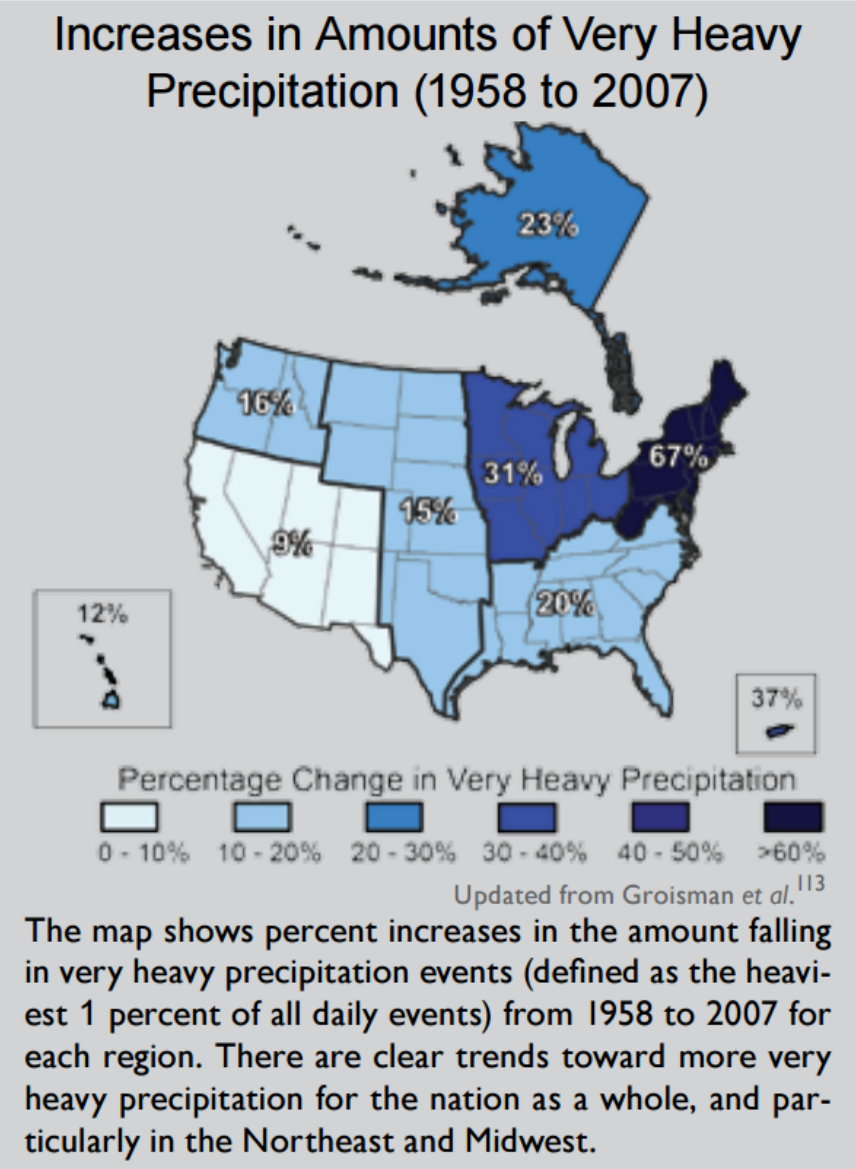
storms, droughts, floods, heat waves and rising sea levels creating significant impacts on people, natural resources and economic conditions around the globe.

The transportation system is the second-largest contributor to Greenhouse Gas emissions in the United States, and the majority—approximately 72 percent—of the transportation sector's emissions are generated by road transportation, including both passenger and freight travel. In 2011, the percentage of total Greenhouse Gas emissions in Massachusetts from the transportation sector was 39% of all emissions conducive to climate change.[7] Additionally, research studies have identified the serious impacts climate change poses for transportation. Increases in very hot days will compromise pavement integrity, and deform rail lines; increased flooding will inundate roads, bridges, and rail lines. Heavier rainfall may require redesign and replacement of local drainage structures; and more frequent and more severe hurricanes and snow storms will disrupt service in affected areas and require devoting more resources to evacuations. Research shows that climate change impacts are already happening, as a matter of fact, the Northeast region of the United States had the highest increase in the nation of heavy rain events from 1958 to 2007[8] (See Figure III-3).

Recognizing the importance and impacts of global warming, the Commonwealth passed the Global Warming Solutions Act (2008), which set the goal of a 25% reduction in Greenhouse Gases below 1990 levels by 2020, and 80% by 2050. Since then, several efforts have been developed across agencies. MassDOT in representation of the transportation sector developed the GreenDOT Policy and Implementation Plan which is geared towards the attainment of this goal. GreenDOT includes mode-shift as one of the key aspects of Greenhouse Gas and set a goal of tripling the amount of travel by walking, bicycling, and public transportation between 2010 and 2030. It requires a threefold strategy: (1) to increase the investment in transit, biking and walking facilities, (2) to promote traveler education and encouragement to use healthy, active transportation modes, and (3) to enhance the roadways and transit systems performance.

[7] Source: MassDEP (2014). Massachusetts Annual Greenhouse Gas Emissions Inventory: 1990 through 2011 with partial 2012 data. Retrieved at: http://www.mass.gov/eea/docs/dep/air/climate/maghginv.xls.
[8] U.S. Global Change Research Program. *Global Climate Change Impacts in the United States*. Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, (eds.). Cambridge University Press, 2009. Retrieved at: http://downloads.globalchange.gov/usimpacts/pdfs/climate-impacts-report.pdf.

Figure III-3: Increases in Amounts of Very Heavy Precipitation


Increases in Amounts of Very Heavy Precipitation (1958 to 2007)
23%
16%
31%
67%
15%
9%
20%
12%
37%
Percentage Change in Very Heavy Precipitation
0 - 10%
10 - 20%
20 - 30%
30 - 40%
40 - 50%
>60%
Updated from Groisman et al.[113]
The map shows percent increases in the amount falling in very heavy precipitation events (defined as the heaviest 1 percent of all daily events) from 1958 to 2007 for each region. There are clear trends toward more very heavy precipitation for the nation as a whole, and particularly in the Northeast and Midwest.

U.S. Global Change Research Program. *Global Climate Change Impacts in the United States*.

Performance Management

Reduction in Greenhouse Gases requires a multidimensional approach. It pertains to sustainable practices, congestion management strategies, mobility improvements, expansion of multi-modal, healthy, active modes of transportation. Mobility2040 focuses its climate change goals to three areas: (1) increasing mode share and reduction of VMT, (2) emphasizing traveler information thru technology, and (3) identifying vulnerabilities in major regional infrastructure that is susceptible to climate change.

- Triple walk/bike/transit share in Worcester and double walk/bike/transit share in urbanized areas outside of Worcester by 2040.
- Identify vulnerable infrastructure susceptible to climate change now and add scoring criteria in the TIP for future years.
- One percent VMT reduction in each 5-year period.
- Institute one new Park & Ride lot in each 5-year period where adequate future year demand has been modeled for Transit & TDM along congested corridors.
- Install 5 Transit Signal Priority every 5 years.
- Expand I-290 ITS Real Time Traffic Management (RTTM). RTTM on I-395 and Route 146 also. Install 2 Variable Message Boards (VMB) every 5 years.

Accomplishments

While the magnitude of potential changes related to global warming are difficult to predict, transportation planners are called to assess potential harms related to these climate effects in order to better address infrastructure vulnerabilities and better plan for adaptation. In this regard, the CMMPO included the reduction of Greenhouse Gas generated by auto and transit as one of the core Mobility2040 goals. VMT reductions, TDM strategies and Park & Ride facilities are all included in Mobility2040 as Greenhouse Gas reduction measures. In addition, the CMMPO evaluates air quality impacts for all regionally significant transportation projects in conformity with federal and state's regulations that are included in the TIP and the LRTP.

Also, the CMMPO has taken steps to identify criteria to evaluate the vulnerability of existing infrastructure and main corridors as part of the region's Evacuation Plan. The criteria include flood-prone areas based on historical information, local hazards and location of primary services, along with Environmental Justice areas and other vulnerable populations that could be disproportionately impacted by an extreme weather event. Recent Corridor Profile planning studies have been successful in identifying critical infrastructure at stream crossings that could be affected by extreme flood events.

Related to transit, the CMMPO aims to maintain FTA age standards for transit vehicles. In addition to this, the WRTA has committed to acquiring hybrid vehicles as the common practice and to improve the performance of their all-electric vehicles. In recent years, the WRTA had added new routes to the system (including in and to surrounding towns) and the new Hub and all

fixed-route vehicles have bike racks, which provide more options for last mile trips. The WRTA has implemented several rider tools like system maps, schedules (print and digital), and real-time arrival and departure information from the Hub, or at the stops by using text or by QR codes. The website has been improved to include all the information readily available to their passengers. Another strategy used to improve transit operations is the use of Transit Signal Priority (TSP) systems. The WRTA analyzed several intersections with the intention to improve on-time performance by using TSP technologies.

To expand pedestrian and bicycle accommodations, the CMMPO has worked on several efforts, including the construction or development of new facilities like the new WRTA HUB and strengthening the network base with local organizations. In this regard, the CMMPO has been involved in walkability assessments and pedestrian and bicycle counts in coordination with local communities. Also, the CMMPO has partnered with MassRIDES to promote healthier commuting options. One example is the Safe Routes to School Program, which has been successfully offered to at least 5 schools in Worcester in the last 2 years. Further, the CMMPO joined MassRIDES in several activities, including the annual BayState Bike Week.

Information technology is a great ally to alleviate congestion, while in turn reducing harmful emissions, providing fuel savings and improving roadway efficiency. ITS technologies are planned for deployment in the Central Mass region on the length of I-290 interchange between I-495 and the MassPike (I-90). It is hoped this effort will result in travel time savings and improve the capacity along this corridor.

Planning Ahead

The CMMPO will continue evaluating the air quality impacts of all TIP projects. Federal and state regulations have specific methodologies to measure Greenhouse Gas in transportation projects. The CMMPO will continue its efforts in the development of key criteria to identify and address infrastructure vulnerabilities related to climate change as part of the TIP process.

At the same time, the CMMPO is committed to achieving at least one percent VMT reduction in each 5 year period, which will continue strengthening the links with state and local partners in traveler's education efforts as a way to encourage mode change. The institution of at least one Park & Ride lot every 5 years is also a strategy that the CMMPO will pursue in its effort to reduce the region's VMT.

In the same fashion, the CMMPO will pursue the development of more pedestrian and bicycle accommodations throughout the region with the objective to triple walk/bike/transit share in

Worcester by 2040 and double it in urbanized areas outside of Worcester by 2040. In this regard, the CMMPO will continue to work on the inventory of pedestrian and bicycle gaps and needs in the region with the intention of addressing these needs during the TIP development process. The CMMPO is committed to expand the bicycle infrastructure in the region by 50 miles by 2040. Also, it will continue promoting Complete Streets practices in the region's municipalities.

Reliance on ITS technologies will continue, and the CMMPO will facilitate the installation of information systems or kiosks at major intermodal locations, at least 2 locations every 5 years. Also, the CMMPO will work on the expansion of the I-290 ITS Real Time Traffic Management (RTTM), to include I-395 and Route 146 in the future as well. The CMMPO has committed to promote the installation of at least 2 Variable Message Boards (VMB) every 5 years.

Related to transit, the WRTA is committed to maintain their fleet in state of good repair and has a fleet rotation plan in place as a way to keep the age standard of its fleet to no more than 6 years for buses or 5 years / 100,000 miles for passenger vans. Also, WRTA's Advisory Board has pledged to acquire efficient buses, for which any new purchase will be either high performance hybrid buses or all-electric buses. In terms of planning, the WRTA will work on an accessibility plan to identify the needs for pedestrians and bicycling accessibility in a ½ mile radius of the top high boarding / alighting stop locations. In addition, the CMMPO envisions to install at least 5 Transit Signal Priority signals in the next 5 years along main transit corridors.

Transportation Security

Policy Background

Transportation security refers to both personal and homeland security. It includes the vulnerability to intentional attack and natural disasters as well as the associated evacuation procedures. The goal is to increase the security of the transportation system for both motorized and non-motorized users. In order to achieve that goal, CMRPC staff in conjunction with Montachusett Regional Planning Commission (MRPC) under the guidance of the Central Region Homeland Security Advisory Council (CRHSAC) is working on an evacuation plan for all of Worcester County.

The overall goal of the Evacuation Plan is to provide Worcester County emergency management personnel with a comprehensive Regional Evacuation Plan. Phase 1 was primarily a data gathering procedure. Phase 2 is anticipated to include identification of evacuation scenarios, modeling of evacuation impacts against current conditions, and identification of

recommendations for prioritization and implementation of a County-Wide Evacuation Plan. Phase 3 is anticipated to be development of a County-wide Evacuation Plan based on Phase 2 data and recommendations, as well as involvement of stakeholders. Phase 3 would include establishment of communications protocol, and implementation of publicity of such outcomes, including perhaps coded signage and development of standard messaging systems.

Performance Management

As discussed in Chapter II of this report, MAP-21 requires performance based planning on federal emphasis area of Safety and Security. Mobility2040 recognizes the importance of the Transportation Security and measure progress to achieve the following goals and objectives:

Goal: Improve the Safety and Security of the region
Objective: Enhance Transportation Security Coordination regionwide
Performance Measure:

- Conduct one regional workshop/tabletop exercise every year to advance evacuation planning
- Continue involvement with Montachusett Regional Planning Commission (MRPC) and statewide evacuation planning efforts

Accomplishments

CMRPC and MRPC under the guidance of the CRHSAC have completed Phase 1 of the Worcester County Evacuation Plan. Phase 1 was primarily a data gathering exercise which consisted of two sub-phases (Phase1a and Phase1b). Phase 1a provided an initial data inventory and assessed readily accessible data and conditions. The data that was compiled of the Phase 1a is:

Key Demographics

- Populations
- Identify and describe daytime and nighttime populations
- Major employment centers
- Hospitals

- Population densities
- Special populations
- Group quarters institutions
- Environmental Justice populations
- Natural Features
- Flood Plains
- Critical Dams
- Any other features identified by the Council

Transport Systems

- Overall Current Travel Patterns (to assess change needed in specific scenarios)
- Roadway Characteristics/Condition
- Transit (bus/rail/charter):
  - Capacity
  - Lines (rail has fixed routes)
  - Private operators/charters
- Private Auto
- Congestion (Volume-to-capacity; Intersection Ratings)
- Bridge Characteristics/Condition
- Major water bodies (for example, Lake Quinsigamond presents impediment to E-W travel in area)

Communication Systems

- Message boards
- Intelligent Transportation Systems
- Key travel corridors
- Traffic cameras
- Shelter locations

Phase 1b was a continuation of the work completed in Phase 1a, filling any data voids and working with municipalities to identify evacuation zones, evacuation routes, and traffic control points.

Between January 2013 and August 2013, CMRPC and MRPC met with emergency personnel from all 65 communities in Worcester County to gather information that would fill any data voids from Phase 1a related to the municipality; and to seek initial input on the identification of evacuation routes, traffic control points and evacuation zones.

Meetings with multiple towns within the CMMPO region, as clustered below, were then facilitated to review the draft maps and check for potential conflicts or incongruities that might require resolution across town borders. Holden, Paxton, Leicester, Auburn, Millbury, Worcester, West Boylston (Rutland and Hubbardston invited as well)

- Northborough, Boylston, Berlin, Bolton, Westborough, Shrewsbury, Southborough
- Barre, Hardwick, New Braintree, Oakham, Princeton, and Rutland
- Grafton, Sutton, Northbridge, Upton, Milford, Hopedale, Mendon, Blackstone, Millville, Uxbridge, Douglas
- Charlton, Sturbridge, Southbridge, Dudley, Webster and Oxford
- East Brookfield, West Brookfield, North Brookfield, Brookfield, Spencer, and Warren.

In the MRPC region conflicts or discrepancies that requires resolution across town borders was handled on a case-by-case basis with emergency personnel from each respective community.

It is important to note that evacuation related data was also gathered from abutting Massachusetts RPAs (Regional Planning Agencies) and states where available. This data was incorporated into the planning process to ensure that any evacuation routes feeding into the region from abutting areas matched up with routes in Worcester County communities ensuring inter-agency consistency.

Planning Ahead

In the many meetings held, as staff sought to work with municipal officials to identify routes, inevitably, someone would ask "What type of event are we planning for?" Staff found it hard to be scenario neutral. We often indicated that though a likely scenario would be a major coastal event such as a hurricane, we wanted to identify corridors or conduits to move large populations of people. Even as we discussed evacuation planning, we often found that with the exception of local disasters, Worcester County was likely to be a "pass through" community (such as Boston area residents moving as far west as possible) or a "receiving or host" community (Boston area or coastal communities, heading to and stopping in Worcester County).

Electronic Comprehensive Emergency Management Plan (eCEMP) Data Inconsistencies
Though stakeholders were generally eager to provide local information and insight, staff found that level of accuracy between local data and data drawn from the state's eCEMP Database varied widely. Some communities were meticulous about keeping the information up-to-date, while other communities found this to be a lower priority for available resources.

Communication Across Municipal Borders
Across the board municipal officials were concerned about how emergency personnel would communicate with each other across the town boundaries, across the region and across the state. There was a widespread concern about overall coordination and direction, specifically with regard to communication and guidance from MEMA, MassDOT and the Mass State Police.

Massachusetts Turnpike
For the nine (9) communities in Worcester County that the Massachusetts Turnpike (I-90) passes through, a consistent concern was raised about gaining access to Mass Turnpike "snow" gates to add additional entry points on the Turnpike.

Primary Care Shelters

Most Primary Care shelters are high schools or senior centers. On the other hand, eCEMP lists many more facilities; some that have no generator or will not be opened. It is important to clearly communicate about which shelters will open, when, and providing what services. This can be communicated with multiple tools - town website, message board, reverse 911, and Code Red (if available).

Communication with Residents

Communication with residents was generally a concern. 29 communities have contracted with Code Red, two (2) communities were considering contracting for Code Red services, and the 32 communities have either no emergency or a different emergency communication service.

Communication with Public Transportation Authorities

Communication with public transportation authorities will be extremely important. AMTRAK, WRTA, MBTA and MART will be needed to move concentrated populations, hospitals, etc. Scenario planning needs to address day-time and night-time populations, employment centers, residential developments, institutions hospitals, etc.

Communication Across State Borders

Communities bordering other state and counties were justifiably concerned about evacuation planning efforts in their neighboring communities and regions. 24 of the participating communities abut New Hampshire, Connecticut, Rhode Island, or an adjacent Massachusetts County.

Gas Stations

Since gasoline will be a highly valued resource by evacuees and emergency personnel alike, as part of this project the existing locations of public gas stations were mapped. Many more rural communities do not have gas stations located within their boundaries. For this and many other pieces of information gathered in this project there was tremendous concern about keeping information and tools current and up-to-date.

Additional Needs

In many meetings, officials identified additional needs such as Opticom[9], bridge repairs, facility repairs, staffing needs, and evacuation route signs that would be needed to affect an orderly

[9] The Opticom System provides traffic signal priority override for a high level of safe traffic management for emergency vehicles travelling through an intersection.

evacuation. There is a need for MassDOT to prioritize bridge repair on the primary and secondary evacuation routes.

Local disasters most often identified were train derailment, truck rollover, pipeline explosion or deficient dams. In addition, power plants/transformer stations, waste water treatment or sewage treatment plants, and a few big chemical plants were also identified. The Quabbin and Wachusett reservoirs and aqueduct systems that supply water to Boston area residents and the various reservoirs that supply the City of Worcester were indicated as vulnerable infrastructure. 49 communities have the potential to be directly affected by a train derailment or other railroad accident in their community. Only 19 of the communities are not intersected by State Routes 2, 9, 146, US-20 or I-84, I-90, I-190, I-290, I-395, or I-495. Every other community sees significant cross state or interstate traffic that has a high potential for truck rollover or other accident that could complicate a regional evacuation.

In addition, the region's communication towers (i.e. summit of Wachusett in Princeton, Ragged Hill in North Brookfield, or Asnebumskit in Paxton) were determined to be important vulnerable infrastructure.

Private emergency communication systems, such as Code Red,[10] are important means of communication with residents in situations such as weather related events or evacuations.

Next Steps

In 2015 staff will continue Phase 2 Evacuation planning efforts. Phase 2 will aid jurisdictions in practical application and use of the "Tool Kit'. This will be accomplished through the development and delivery of training workshops and exercises to assure jurisdictions have the knowledge and capabilities to utilize this data during an actual event. Planners will interview municipal and regional stakeholders in advance of the workshops to identify communication concerns. Based on planner/facilitator understanding, workshop agendas will be designed that interactively develop and test a communications protocol between local and regional emergency personnel.

Phase 2 will continue to align the Central Region Homeland Security Advisory Council Evacuation Plan strategies and goals with state evacuation plans. During this phase efforts to

[10] Code Red is designed to enable local government officials to record, send and track personalized messages to thousands of citizens in minutes. http://www.ecnetwork.com/codered/

identify and resolve conflicting response actions between all stakeholders will be undertaken. Phase 2 will continue to utilize the Evacuation Advisory Council that helped coordinate and facilitate planning efforts in the first two phases of the evacuation planning project.

Title VI, Linguistic Isolation & Environmental Justice Population

Policy Background

Transportation planners have processes to determine how, when and where federal monies should be invested in regards to mobility, such as highway projects, roadway improvements, railway expansion, port development, freight movement, transit projects and bike and pedestrian accommodations. But also, transportation planners analyze accessibility to employment opportunities, health care, housing, education and entertainment. These tasks take into consideration public involvement and the needs of the community, with special attention to those that are most vulnerable, like the elderly, people with disabilities, low – income and minority population. As such, equal access and opportunity are embodied in transportation planning. The CMMPO, assisted by the 3C planning framework, recognizes that a multimodal transportation system levels the playing field, and minimizes mobility and accessibility disparities in our community.

Notwithstanding, there are regulations in place to guarantee that all transportation agencies operate its programs, services and activities in full compliance with federal nondiscrimination laws, including Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, Executive Order 13166, "Improving Access to Services for Persons with Limited English Proficiency", Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”, U.S. DOT policy and guidelines and state regulations including the Massachusetts Public Accommodation Law.

Title VI prohibits discrimination in federally assisted programs and requires that no person in the United States of America shall, on the grounds of race, color, or national origin, including limited English proficiency, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal assistance. The Federal Highway Administration and the Federal Transit Administration regulations expand Title VI rule to prohibit discrimination on the basis of age, sex, and disability. Additionally, Massachusetts Public Accommodation Law prohibits making any distinction, discrimination, or restriction in admission to or treatment in a place of public accommodation based on race, color, religious creed, national origin, sex, sexual orientation, disability, or ancestry.

Environmental Justice primarily aims to identify and address disproportionately high and adverse human health and environmental effects of programs, policies and activities on minority and low-income population. Research has shown that households in poverty spend a higher proportion of their income in transportation expenses and suffer from limited vehicle availability.[11]

Performance Management

Transportation projects shall accommodate all users, regardless of their income, national origin, language barriers, disabilities, age, sex, ability to drive, or any other special needs. In that regard, Mobility2040 has a goal to achieve ***"Equitable Transportation for all Populations."*** The measures established to achieve it are:

- Increase the number of ADA-compliant intersections by 10% over 10 years
- Improve outreach efforts by facilitating at least one open house/community sessions across the region every year.
- Increase multimodal access to job opportunities, health care, education, recreation, healthy food and affordable housing in two Environmental Justice or vulnerable population neighborhoods in 5 years.
- Inventory the bicycle and pedestrian network within a ½ mile of top boarding transit locations in the next two years.
- Expand transit/paratransit coverage in areas that lack adequate transit service with Environmental Justice population and other vulnerable populations. 2 routes every 5 years.

Accomplishments

The CMMPO has been repeatedly in compliance with federal and state regulations and is fully committed to address the needs of all in the Central Mass region. In 2013, the CMMPO received a "good standing" approval from a major Federal Certification Review of its programs, services and activities. Furthermore, the CMMPO had submitted Title VI reports (annual reports, triennial reports, among others) on time, and has assisted subrecipients in their compliance with Title VI regulations.

CMRPC website has been updated to reflect recent changes in the policy and to include complaint procedures and the "Discrimination Complaint Form", making them readily accessible

[11] 2014. FHWA NHTS Brief. Mobility Challenges for Households in Poverty. Available in: http://nhts.ornl.gov.

to download either in word or in PDF formats. The CMMPO developed a Public Outreach Plan (POP) with input from a wide variety of transportation stakeholders, and an LEP Plan, both documents are also available to download on the agency website. CMMPO staff also assists the WRTA in providing Title VI information and procedures to its bus riders through flyers, "car cards", public hearings/workshops, and area newspapers. Also, staff assists the WRTA in transit planning activities and Title VI provisions in the planning process.

Moreover, in order to facilitate the implementation of the 3C process and to expand citizens' involvement in the CMMPO functions, an advisory committee was established for the CMMPO. The Advisory Committee provides a forum for broad public participation, technical and citizen input in the transportation planning process. It brings together public agencies, elected and appointed officials, transportation providers, environmental interests, technical experts, specialists, business persons and citizens concerned with transportation plans and programs.

The CMMPO has historically made a concerted effort to involve the region's disabled, elderly, low-income and minority populations. A number of advocacy groups serving these populations are included on the TPAG Elderly and Disabled Technical Task Force. These advocacy groups distribute information and materials to their associates, including local community organizations. Recently, the CMMPO has been working to address the region's needs through the Regional Coordinating Council.

The CMMPO has also updated his Environmental Justice definition based in the region's characteristics. New criteria were added to the CMMPO Environmental Justice definition recognizing those who are the most vulnerable. The CMMPO vulnerable populations are: minority and low-income populations, zero-car households, elderly population, linguistically isolated households and Hispanic or Latino population. Maps were developed identifying areas with Environmental Justice population and vulnerable population (see Figure III-4). Also, the maps show the degree of vulnerability (number of meet criteria in each Census Block Group). The CMMPO completed a Benefits and Burdens Analysis for projects included in the TIP.

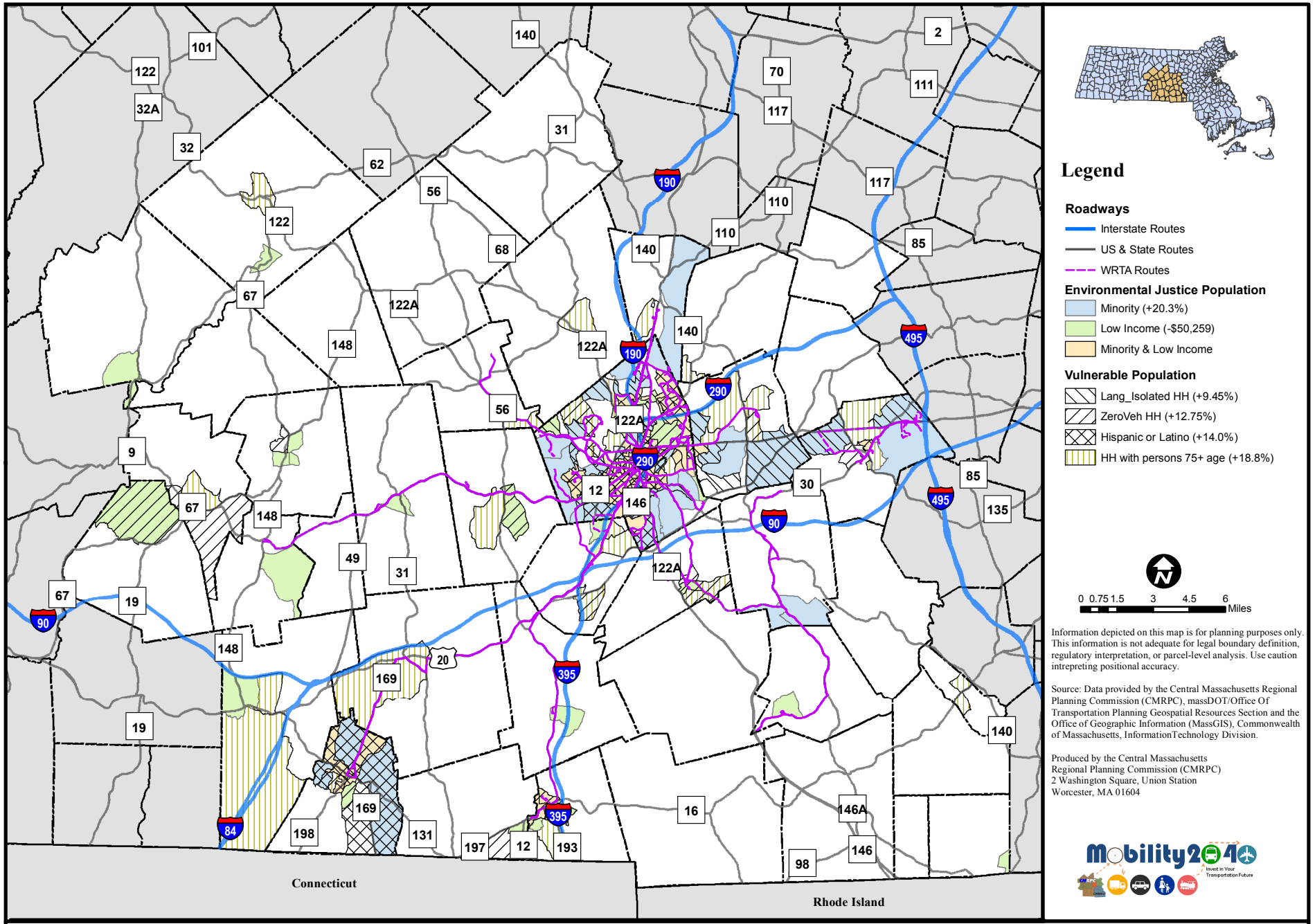

Legend
Roadways
Interstate Routes
US & State Routes
WRTA Routes
Environmental Justice Population
Minority (+20.3%)
Low Income (-$50,259)
Minority & Low Income
Vulnerable Population
Lang_Isolated HH (+9.45%)
ZeroVeh HH (+12.75%)
Hispanic or Latino (+14.0%)
HH with persons 75+ age (+18.8%)
0 0.75 1.5 3 4.5 6
Miles
Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution intrepreting positional accuracy.
Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT/Office Of Transportation Planning Geospatial Resources Section and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, InformationTechnology Division.
Produced by the Central Massachusetts Regional Planning Commission (CMRPC)
2 Washington Square, Union Station
Worcester, MA 01604
Mobility2040
Invest in Your Transportation Future
Connecticut
Rhode Island

Figure III-4: Environmental Justice and Vulnerable Population

Planning Ahead

By recognizing the region's characteristics and its diversity, the CMMPO has been effective in reaching out to vulnerable populations, reinforced its outreach process, provide better accommodations and translations of vital documents to non-English speakers. In the same fashion, the CMMPO has advised developers and consultants regarding the region's characteristics improving the public participation process. The CMMPO will continue working to improve its outreach strategies. An integral part of this evolution has been the trainings in cultural diversity which has helped tailor outreach strategies to the region's cultural variances.

Also, the CMMPO will continue its work on transit and paratransit planning, ensuring the compliance with federal and state's policies and guidance. More emphasis will be placed on improving accessibility for those who are the most vulnerable in the region, improve service quality and guaranteeing a fair fare structure. CMMPO staff will work together with the WRTA to identify "transit deserts"[12] in the region in those areas where vulnerable or Environmental Justice populations and high demand for transit service exists.

The CMMPO will continue its work on identifying the gaps in pedestrian and biking accommodations, especially in areas identified as Environmental Justice neighborhoods. Also, the CMMPO will continue working to increase ADA-compliant intersections throughout the region. Major effort will be placed on increasing accessibility using healthy, active modes of transportation to major employment areas, affordable housing, health care, healthy foods, education and recreational areas.

[12] The concept of "Transit Deserts" was first introduced by Jiao and Dillivan (2013). See "Transit Deserts: The Gap Between Demand and Supply," *Journal of Public Transportation*, Vol. 16, No. 3, pp. 23-35. Retrieved at: www.nctr.usf.edu/wp-content/up;oads/2013/JPT_16.3.pdf.

Access to Essential Services

Policy Background

The U.S. DOT in coordination with FHWA and FTA issued Planning Emphasis Areas (PEA) to guide state's DOTs and MPOs' transportation planning work. One of the main PEA for federal FY2015 is Access to Essential Services, specifically the identification of connectivity gaps in access to essential services. Under MAP-21, accessibility, or the ability to reach essential services, is fundamental in a sustainable, equitable and multi-modal transportation system.

Essential services or activities include: emergency services, health care, public services, education, employment opportunities, access to food and to social and recreational activities.

Performance Management

Mobility2040 includes goals and objectives directly related to improving accessibility to essential services in the region. ***Goal 1: Reduce congestion and improve mobility for all modes*** includes ***Objective 4 - Improved Transportation Accessibility for all modes***, with the following measures:

- Increase the number of ADA-compliant roadways and intersections. 2 locations every 5 years.
- Improvement in the bicycle and pedestrian network within ½ mile of transit stations – for the top 10 high boarding and alighting locations. 2 locations every 5 years.
- Increase average frequency on core-routes to 10 minutes. 2 routes every 5 years.

Moreover, as previously discussed, access to essential services is related with transportation equity. As such, accessibility measures were included in ***Goal 6: Equitable Transportation for all populations.***

Objective 1 - Provide access to essential services; minimize burdens and maximize benefits associated with low-income and minority areas.

- Increase multimodal access to job opportunities, health care, education, recreation, healthy food and affordable housing in two Environmental Justice or vulnerable population neighborhoods in 5 years.

In addition, in ***Goal 7: improve Economic Vitality and Freight Movement***, there is a specific objective related to accessibility to major employment centers and related measures.

Objective 2 - Increase access to major employment centers.

- Improve the bicycle and pedestrian network near 2 major employment centers every 5 years.
- Increase frequency of bus routes traveling to/from 2 identified major employment centers every 5 years.

Accomplishments

The CMMPO has been working on the identification of transportation connectivity gaps for several years now as part of major livability undertakings. One example is the work the CMMPO is doing related to regional bikeways, trails and pedestrian networks. The CMMPO recognizes the suitability to complete the Bay State Greenway (BSG), as such, the staff started to identify state highways with wide shoulders as an option for on-road routes. Also, staff is involved in the Blackstone River Valley Bikeway initiative, a key segment in the BSG Nashua River – Buzzards Bay Corridor. In the same fashion, staff works in coordination with DCR on projects relevant to the Mass Central Rail Trail (104 miles connecting Boston to Northampton), the Midstate Trail (92 miles connecting New Hampshire to Rhode Island through Worcester County), and the East Coast Greenway (3,000 miles connecting Maine to Florida).

In addition, CMMPO staff has been responsive to local needs assisting local communities in the identification of walkability and bicycling gaps through the Neighborhood Safe program or through project-specific assessments. Another major endeavor has been the regional sidewalk inventory. Since 2012, staff is collecting data on sidewalk condition along federal-aid eligible roads in tandem with the regional pavement data collection schedule.

An effort related with the identification of transit gaps, primarily led by the WRTA, is the completion of the WRTA Service Standards. The service standards include performance measures to evaluate service efficiencies. One of the measures is route directness. This measure includes a maximum threshold of 300% of auto-travel time to essential services as a trigger for route's stop data evaluation. Also, the service standards include criteria to evaluate potential new services. The criteria included access to employment centers, education, and presence of vulnerable populations along proposed route, among other criteria. This methodology proved effective for the implementation in 2013 of Route 29, which provided new transit service to the towns of Southbridge, Charlton, Oxford, Auburn and Worcester.

Public meetings are also a great way to identify transit gaps. The WRTA receives public comments all year long through the Customer Service Office, scheduled Advisory Board meetings and additional public meetings to discuss service changes. Recently, the WRTA had a series of "Listening Sessions" to hear from transit riders and public at large their opinions about

the service and how they would like to see the service improved. The comments from these sessions were then included in the process of the Comprehensive Service Analysis, which is still in the works. In addition, every year, the WRTA administers a survey to transit users and include several origin and destination questions, frequency and travel time among others.

WRTA member towns and major employers also had a voice in the identification of transit gaps. As an example, community vans are now providing fixed-route transportation in the towns of Northbridge, Grafton and Westborough as the result of an existing need to connect local services and jobs with the commuter rail and the WRTA fixed-route. The schedule is synchronized with the commuter rail in peak hours as the result of formal consultation and completed surveys by human resources personnel from major employment centers.

Furthermore, the Commonwealth's Executive Order 530, related with quality and efficiency of paratransit and community transportation, recommended the creation of Regional Coordinating Councils (RCC). The RCC is a voluntary advisory body that represents regional stakeholders with an interest in improving community mobility and developing collaborative solutions to existing gaps and barriers. The Central Mass RCC is working in the identification of unmet needs in the region, with special attention to access to jobs and services in rural areas.

Related with auto-travel, MassDOT recently released the Massachusetts Travel Survey 2010-2011 (MTS). The survey collected information about travel patterns, preferences and behavior on a total of 15,033 households, of which 1,148 were completed in the CMMPO region.[13] The results of the survey are currently being analyzed. The CMMPO will input this data into the Travel Demand Model together with the Census Transportation Planning Package (CTPP) to identify future needs and assist in the prioritization of transportation investments, with regard to access to essential services.

Planning Ahead

As a result of the renewed focus on accessibility, the CMMPO is gearing its efforts to perform an incremental accessibility gap analysis for all modes with special attention to Environmental Justice areas while continuing current efforts. Future tasks include the development of the Central Mass Walk and Bike Plan, the completion of WRTA's Comprehensive Service Analysis and the travel study data input to the Travel Demand Model.

[13] Some of the measures included in the survey were related to how far people travel, what mode they take, number of daily trips, trip purpose, among other questions. For more information visit projects' website: http://www.massdot.state.ma.us/planning/Main/MapsDataandReports/Reports/TravelSurvey.aspx

As an initial step for the accessibility gap analysis, the CMMPO analyzed density patterns within the region, with special attention to employment and population density (see Figure III-5). Both, population and employment densities are higher in the Worcester area which gravitates towards the Eastern part of the region along major corridors like I-290, I-495 and Route 9. Also, throughout the region there seems to be a relationship between densely populated areas and employment concentration mostly located on or in proximity to major corridors (ie. Routes 9, 12 and 20). As a result, the western portion of the region is more dependent on these corridors as a lifeline for their communities.

Higher proportions of low income and minority population are mostly concentrated in locations with both high population and employment densities. Other vulnerable populations, like elderly or zero vehicle households are spread out throughout the region, making their accessibility to essential services even more difficult. Also, is noteworthy that in the northwestern section of the region, although not densely populated the employment locations are spread out and are mostly located along local roads, not necessarily federal-aid roads or major regional corridors.

Another relevant observation derived from the density analysis is that in the southeastern section of the region, densities gravitate towards the Route 146 corridor. Route 16 is one of the major corridors in this subregion providing the East-West connection between densely populated areas and employment centers.

As mentioned before, the CMMPO will continue its work assessing the accessibility gaps in the region with a special attention to main corridors.

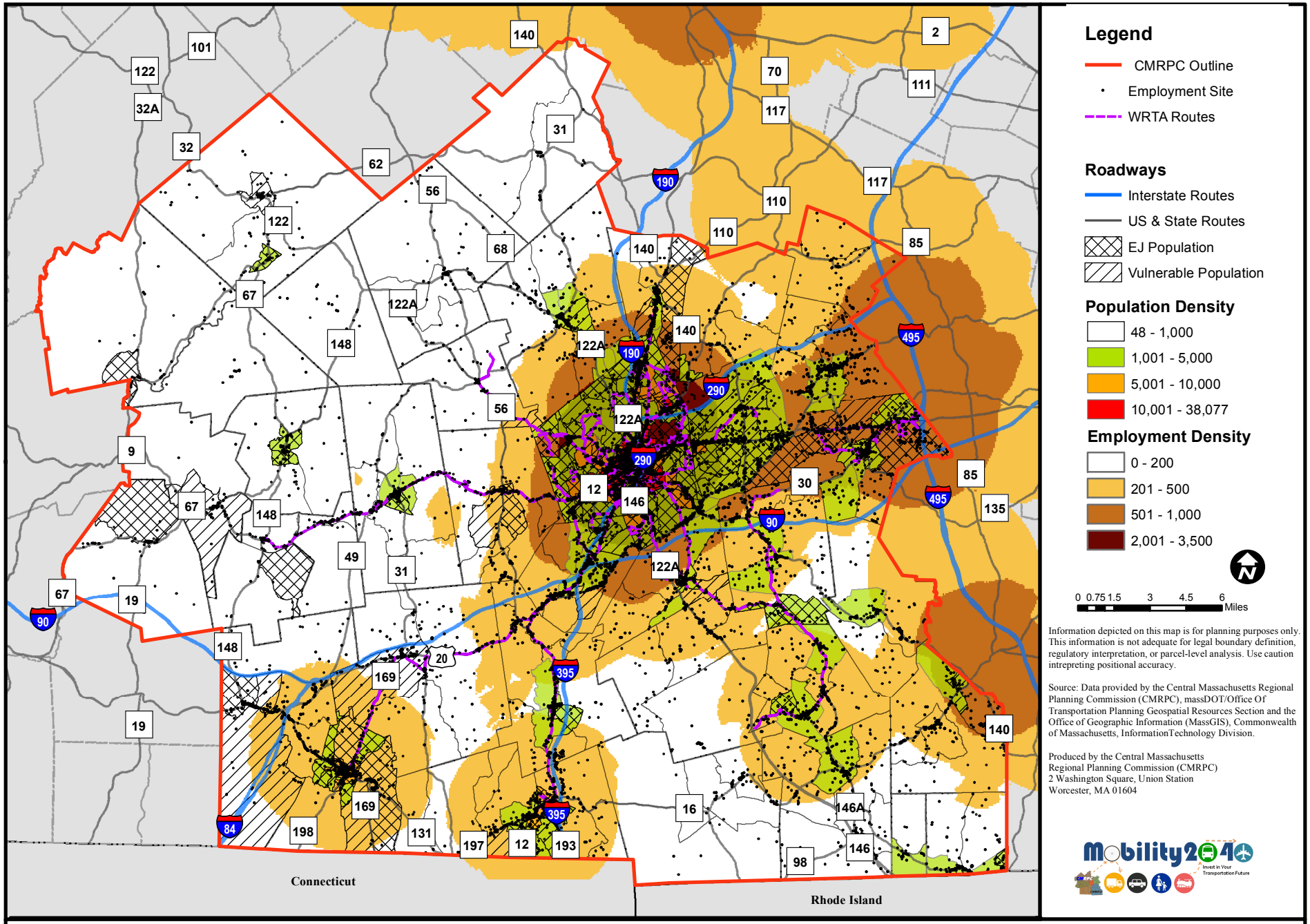

Legend
CMRPC Outline
Employment Site
WRTA Routes
Roadways
Interstate Routes
US & State Routes
EJ Population
Vulnerable Population
Population Density
48 - 1,000
1,001 - 5,000
5,001 - 10,000
10,001 - 38,077
Employment Density
0 - 200
201 - 500
501 - 1,000
2,001 - 3,500
0 0.75 1.5 3 4.5 6
Miles
Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution intrepreting positional accuracy.
Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT/Office Of Transportation Planning Geospatial Resources Section and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, InformationTechnology Division.
Produced by the Central Massachusetts Regional Planning Commission (CMRPC)
2 Washington Square, Union Station
Worcester, MA 01604
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Figure III-5 Access to Essential Services

CHAPTER IV

Transportation Modes

Introduction

The transportation system in the CMMPO region is a multimodal network of roads, bridges, transit services, freight facilities, bicycle routes, pedestrian facilities and intermodal connections that need to work as an integrated system throughout the 40 communities and beyond.

The transportation system is maintained by a number of different entities, including MassDOT, the Worcester Regional Transit Authority (WRTA), Massachusetts Bay Transportation Authority (MBTA), Massachusetts Port Authority (MassPort), private intercity bus carriers, private freight rail carriers, Department of Conservation & Recreation, Army Corps of Engineers, various local/regional/state entities and local communities. Mobility2040 recognizes that all of these stakeholders must work in a coordinated fashion to ensure seamless accessible connections between modes, with the result of providing access to the essential services of employment, health care, education, and recreation for all modal users.

In 2009, transportation reform legislation containing the Massachusetts Healthy Transportation Compact was signed into law. The Healthy Transportation Compact was designed to create a balance in transportation decisions so that all network users would have expanded mobility, access to essential services, a cleaner environment, and improved public health. MassDOT formalized its commitment to the Healthy Transportation Compact in September of 2013 when it issued a policy directive supporting the statewide mode shift goal. The *Healthy Transportation Policy Directive* ensures that all MassDOT projects are designed and implemented in a way that all customers have access to safe and comfortable healthy, active transportation options at all MassDOT facilities and in all services provided. This directive reflects USDOT's *Accommodating Bicycle and Pedestrian Travel: A Recommended Approach*, a policy statement that calls for expanded focus on bicycle and pedestrian accommodation.

On 2010, the Massachusetts Department of Transportation launched GreenDOT; a comprehensive environmental responsibility and sustainability initiative making MassDOT a national leader in "greening" the state transportation system. One of the three primary goals of GreenDOT is to *promote the healthy transportation options of walking, bicycling, and public transit*. GreenDOT contains a section related to Complete Streets, which requires bicycle and pedestrian accommodation as part of the MassDOT *Project Development and Design Guide.*

The following sections provide a brief background of each mode and the associated performance management goals. For each mode, an analysis of gaps was performed and an assessment of

need (including an analysis of how well it provides access to essential services) was completed. Finally, a prioritization strategy to address the needs is presented.

Pedestrian

Background

Healthy, active transportation options are becoming increasingly important in the United States, especially among younger residents. According to *Millennials and Mobility* (APTA), nearly seventy percent (70%) of people 18 to 34 use multiple travel options several times or more per week. Even residents who travel primarily by private automobile are, at some point throughout the day, a pedestrian. Pedestrian travel is a healthy activity that is beneficial to the environment and low cost. It is imperative that safe, easy to use facilities are available where there is a high level of pedestrian activity. For CMRPC planning purposes, a pedestrian is any person travelling on foot or wheelchair (manual or motorized). According to the 2010-2011 Massachusetts Household Travel Survey, approximately 3.2% of CMRPC planning region residents commute to work by walking, while 10.1% of students travel to school via the same mode. Walking can be more efficient, affordable, and convenient than travelling by vehicle on congested streets. Furthermore, there are populations within the region that do not have access to a vehicle as a primary mode of transport, making walking a necessary part of their travels.

Adequate pedestrian infrastructure is essential to providing residents access to essential services. Not only does infrastructure need to exist in areas where there is demand, it also needs to be maintained in a proper manner so that it is accessible to the entire population. Maintenance is especially important in an area such as Central Massachusetts, which experiences harsh winter weather, impairing the travel of pedestrians. In addition, the connection of bicycle and pedestrian infrastructure with transit systems is essential to increasing the mobility of Central Massachusetts residents. The interconnection with the Worcester Regional Transit Authority and the Massachusetts Bay Transportation Authority provides residents with a higher level of multi-modal transportation options, as well as greater opportunities for active living.

Performance Management

As discussed in Chapter II of this report, MAP-21 requires performance based planning related to federal emphasis areas. CMRPC has adopted goals and objectives related to pedestrians for the Mobility2040 Long Range Transportation Plan.

Goal: Reduce Congestion and Improve Mobility for all modes

Objective 4 – Improved Transportation Accessibility for all modes

- Increase the number of ADA-compliant roadways and intersections. 2 locations every 5 years.
- Improvement in the bicycle and pedestrian network within ½ mile of transit stations – for the top 10 high boarding and alighting locations. 2 locations every 5 years.

Goal: Increase Transportation Options and Promote Healthy Modes

Objective 1 - Increase the share of transit, bicycling & walking in the region

- Triple walk/bike/transit share in Worcester by 2040
- Double walk/bike/transit share in urbanized areas outside of Worcester by 2040

Objective 2 - Expand the walk/bike network in the region

- Improve pedestrian network within 1//2 mile of high activity transit stops
- Identify bicycle/pedestrian/transit gaps in the region

Objective 3 - Work with member communities to implement Complete Streets policies

- 10% of communities in the region have a local Complete Streets policy over 10 years.

Goal: Equitable Transportation for all populations

Objective 1 - Provide access to essential services; minimize burdens and maximize benefits associated with low-income and minority areas

- Increase the number of ADA-compliant intersections by 10% over 10 years
- Inventory the bicycle and pedestrian network within a ½ mile of the top ten boarding/alighting transit locations in the next two years

Goal: Improve Economic Vitality and Freight Movement

Objective 2 – Increase access to major employment centers

- Improve the bicycle and pedestrian network near 2 major employment centers every 5 years.

Analysis

Regional Count Program

As part of the Central Massachusetts Regional Bicycle and Pedestrian plan, completed in 2011, staff initiated a pilot bicycle and pedestrian count program to monitor biking and walking trips within the region's existing trail network. The intent of the inaugural count program was to

collect raw data and monitor regional trail usage. In 2012 and 2013, the program was expanded to include specific roadways within the City of Worcester that have marked on-road bicycle lanes. The purpose of including these roadways was to determine overall usage and commuting patterns from various points in Worcester. In 2014, the program was broadened to conduct counts at a community requested location. Staff selected locations that would allow the host community to make full use of the data; to assist a project design with bicycle and pedestrian elements, to complement communities' future plans for enhancements such as adding a sidewalk or a crosswalk, or for general knowledge.

Neighborhood SAFE

Neighborhood SAFE is a new, proactive approach that CMRPC is undertaking in order to provide communities with small area infrastructure assessments from a pedestrian and bicyclist safety perspective. CMRPC has launched this effort to achieve the following objectives:

- Increase awareness of bicycling and walkability in communities throughout the region
- Identify safety issues that pedestrians and bicyclists face
- Provide neighborhood safety analysis for all users of the transportation system
- Generate enthusiasm for healthy, active transportation options

Additional Efforts

- WalkBike Worcester: Staff collaborates extensively with WalkBike Worcester to promote pedestrian projects and policy in the City of Worcester, and increasingly, the CMRPC region. Technical support and analysis is provided for initiatives, including snow removal efforts during the winter and Complete Streets promotion.
- Safe Routes to School: Staff is a key member of the Worcester Safe Routes to School Taskforce, has participated in extensive fieldwork and technical support efforts for the last two years of planning and execution.
- PARK(ing) Day: Staff participated in the first PARK(ing) Day celebration in Worcester, along with WalkBike Worcester, Worcester Department of Public Health, and other organizations.

Needs Assessment

The Central Massachusetts Regional Bicycle and Pedestrian Plan was last updated in 2011, this plan serves as a starting point for bicycle and pedestrian network development in the region. Since the completion of the previous plan in 2011, the region has seen significant interest and growth in improving existing facilities and providing new pedestrian and bicycle facilities. CMRPC staff will update the Regional Bicycle and Pedestrian Plan during 2015-2016 with

further analysis and extensive stakeholder/public outreach. For the purposes of Mobility 2040, preliminary analysis has taken place regarding bicycle and pedestrian related crash clusters as well as sidewalk condition and shoulder width on Federal Aid Eligible roadways in the region.

Safety

The Massachusetts Department of Transportation generates a listing of Highway Safety Improvement Program (HSIP) eligible Auto, Bike, and Pedestrian clusters for the Commonwealth. A list of HSIP eligible locations for the CMRPC planning region was derived from the statewide list. Ten (10) pedestrian crash clusters have been identified as HSIP eligible for the region. (It should be noted that mainline Interstate crash clusters have been removed from consideration due to jurisdictional issues.) Communities that wish to pursue HSIP funding for a project to improve safety at any of these locations will need to perform a Road Safety Audit (RSA). The Federal Highway Administration defines a Road Safety Audit (RSA) as the formal examination of an existing or future road or intersection by an independent, multidisciplinary team. The purpose of an RSA is to identify potential safety issues and possible opportunities for safety improvements considering all roadway users. Communities can contact CMRPC for further assistance regarding this requirement.

Sidewalk Inventory & Management

In conjunction with CMRPC's regional bicycle and pedestrian planning and pavement management efforts, staff has launched the development of a regional sidewalk inventory. Data collection efforts are performed in tandem with the regional pavement data collection schedule and are observed through a visual inspection. The inventory includes detailed information such as the location of sidewalks along federal-aid eligible roads, direction along the roadway, sidewalk width, type of material, and general condition. In 2012, staff established the criteria and conducted a pilot study for one of the regions communities and as a result refined the data collection process to gather future sidewalk condition data. The regional sidewalk inventory will be updated on a three-year cycle, with the initial data of the entire region to be completed during the 2015 data collection season. Ongoing efforts include the digitization of observed sidewalk segments into GIS, including ramps and crosswalks and an updated table to "score" the overall condition of each segment.

In 2009, CMRPC staff conducted a visual survey of the existing walking and bicycling infrastructure and accommodations in the city and town centers of the MPO's 40 community region. The purpose of the survey was to acquire a base inventory of these facilities within higher density areas and to take a cursory examination of what accommodations exist within the region.

Prioritization

In the CMRPC Region there are ten (10) High Priority HSIP Eligible Pedestrian Crash Locations (See Table IV-1). For the purposes of the Long Range Transportation Plan, the crash clusters that are HSIP eligible are considered highest priority. There is a large concentration of bicycle and pedestrian HSIP clusters within a half mile of the intersection located at Main Street and Chandler Street/Madison Street in Worcester. This intersection is also located within feet of the highest ranking automobile cluster in the region (#8 Statewide). A recent Road Safety Audit concerning the Main Street/CBD project in Worcester analyzed this high crash location. Furthermore, a MassDOT project to reconstruct the Belmont Street Bridge over Interstate 290 is currently underway. A Road Safety Audit was performed at this location, and the results of that exercise have been incorporated into the reconstruction effort. The only HSIP eligible pedestrian cluster outside of the City of Worcester is located in the center of the Town of Spencer. Figure IV-1 has been provided on the following page to provide additional information regarding HSIP eligible clusters in the Worcester Central Business District. Please see the *2009-2011 CMRPC Regional Safety Report* for expanded discussion regarding other non-HISP eligible bicycle crash clusters.

Table IV-1: 2009-2011 High Priority Pedestrian Clusters in the CMRPC Region

Crash Count	# Fatal	# Injury	# Non-Injury	EPDO	Street #1	Street #2	Town	Rank
103	0	79	24	419	MAIN STREET	SOUTHBRIDGE STREET	WORCESTER	3
37	0	26	11	141	MAIN STREET	CAMBRIDGE STREET	WORCESTER	
26	0	20	6	106	MAIN STREET	HAMMOND STREET	WORCESTER	
25	0	20	5	105	MURRAY AVENUE	MAIN STREET	WORCESTER	
24	1	17	6	101	MAIN STREET	MECHANIC STREET	SPENCER	
22	0	18	4	94	GRAFTON STREET	ORIENT STREET	WORCESTER	
24	1	14	9	89	BELMONT STREET	INTERSTATE 290	WORCESTER	
18	0	16	2	82	BELMONT STREET	EASTERN AVENUE	WORCESTER	
18	1	11	6	71	PARK AVENUE	PLEASANT STREET	WORCESTER	
19	0	12	7	67	INTERSTATE 290	VERNON STREET	WORCESTER	

Access to Essential Services

CMRPC is working toward promoting interconnected, multimodal transportation networks for all road users. FHWA has made bicyclist and pedestrian safety a high priority, along with providing a network that allows for access to essential services in an efficient manner. FHWA provides the following guidance in regards to this initiative: As part of the transportation planning process, identify transportation connectivity gaps in access to essential services. Essential services include housing, employment, health care, schools/education, and recreation. This emphasis area could include identification of performance measures and analytical methods to measure the transportation system's connectivity to essential services and the use of this

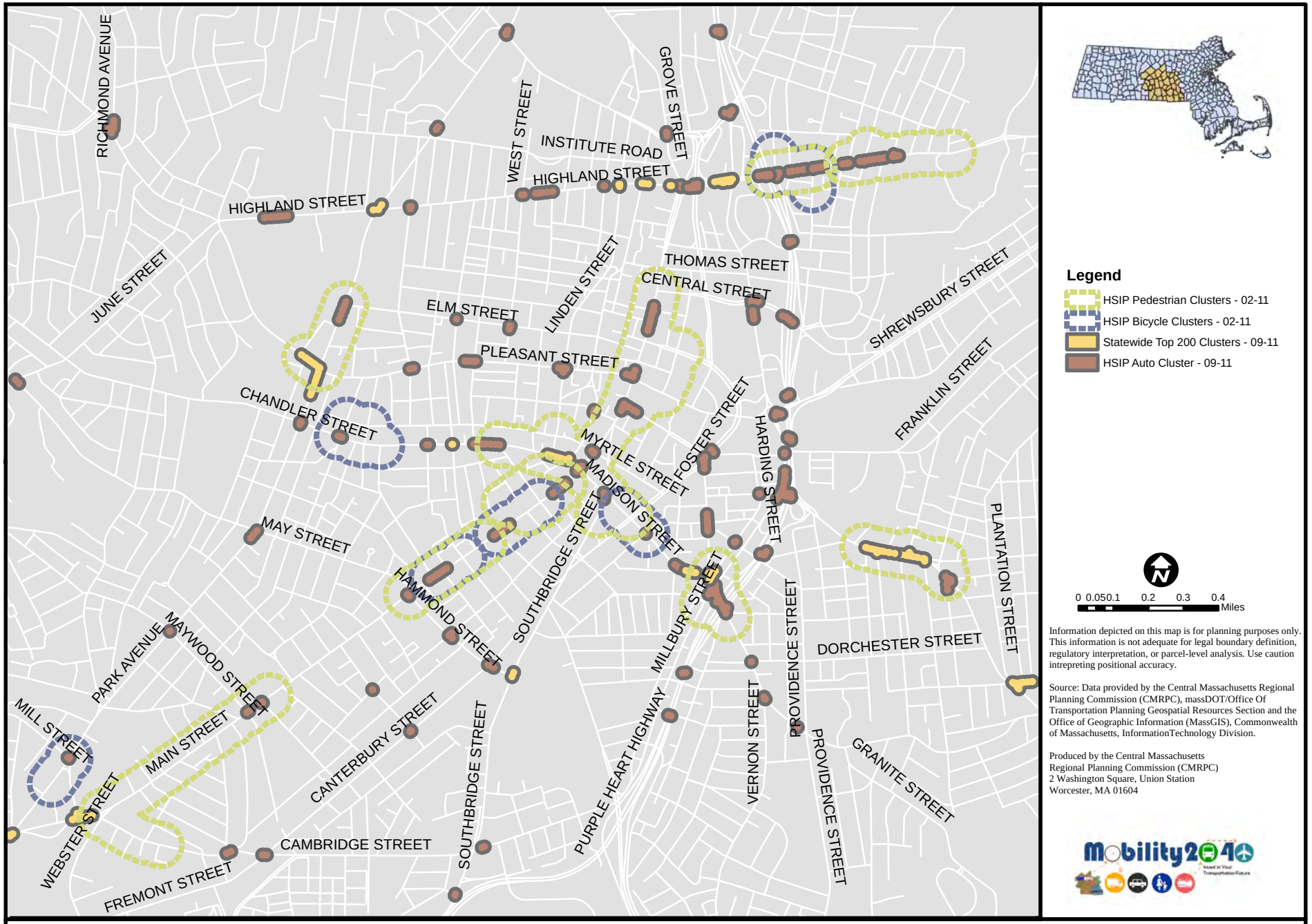


Figure IV-1 Central Worcester HSIP Clusters

information to identify gaps in transportation system connectivity that preclude access of the public, including traditionally underserved populations, to essential services. It could also involve the identification of solutions to address those gaps.

Next Steps

CMRPC staff will begin working on the update to the Regional Bicycle and Pedestrian Plan in the summer of 2015. This update will coincide with the completion of data collection related to sidewalk conditions along federal aid eligible roadways in the region. With Federal Planning Emphasis (PEA) Area Access to Essential Services as an overarching guide, staff will work with regional stakeholders to identify areas where gaps are present in the system. The updated Regional Bicycle and Pedestrian Plan will serve as the foundation for the development and expansion of a multimodal network that provides for all users. Gaps or deficiencies in the pedestrian network will be identified and prioritized in order to develop a listing of potential projects that could be funded with Congestion Mitigation Air Quality (CMAQ) or Transportation Alternative Program (TAP) funding sources.

Bicycle

Background

While recreation has been the preferred use for bicycling in the past, it is increasingly becoming the primary mode of transportation for everyday activities. As mentioned in the previous section, millennials are increasingly using multiple modes, including cycling, to travel on a daily basis. Nationwide, communities large and small are turning to bicycling to complete short trips, this holds true for the CMMPO region. According to the 2010-2011 Massachusetts Household Travel Survey, approximately 0.5% of CMRPC planning region residents commute to work via bicycle, while 0.2% of students travel to school via the same mode. Cycling can be more efficient, affordable, and convenient than travelling by vehicle on congested streets. Furthermore, there are populations within the region that do not have access to a vehicle as a primary mode of transport, making cycling a necessary part of their travels. The connection of bicycle and pedestrian infrastructure with transit systems is essential to increasing the mobility of Central Massachusetts residents.

Performance Management

As discussed in Chapter II of this report, MAP-21 requires performance based planning related to federal emphasis areas. CMRPC has adopted goals and objectives related to bicycling for the Mobility2040 Long Range Transportation Plan.

Goal: Reduce Congestion and Improve Mobility for all modes

Objective 4 – Improved Transportation Accessibility for all modes

- Improvement in the bicycle and pedestrian network within ½ mile of transit stations – for the top 10 high boarding and alighting locations. 2 locations every 5 years.

Goal: Increase Transportation Options and Promote Healthy Modes

Objective 1 - Increase the share of transit, bicycling & walking in the region

- Triple walk/bike/transit share in Worcester by 2040
- Double walk/bike/transit share in urbanized areas outside of Worcester by 2040

Objective 2 - Expand the walk/bike network in the region

- Expand bicycle infrastructure in the region by 50 miles by 2040
- Increase bicycle parking at public facilities in the next five years
- Identify bicycle/pedestrian/transit gaps in the region

Objective 3 - Work with member communities to implement Complete Streets policies

- 10% of communities in the region have a local Complete Streets policy over 10 years.

Goal: Equitable Transportation for all populations

Objective 1 - Provide access to essential services; minimize burdens and maximize benefits associated with low-income and minority areas

- Inventory the bicycle and pedestrian network within a ½ mile of the top ten boarding/alighting transit locations in the next two years

Goal: Improve Economic Vitality and Freight Movement

Objective 2 – Increase access to major employment centers

- Improve the bicycle and pedestrian network near 2 major employment centers every 5 years

Analysis

Regional Count Program

As part of the Central Massachusetts Regional Bicycle and Pedestrian plan, completed in 2011, staff initiated a pilot bicycle and pedestrian count program to monitor biking and walking trips within the region's existing trail network. The intent of the inaugural count program was to collect raw data and monitor regional trail usage. In 2012 and 2013, the program was expanded to include specific roadways within the City of Worcester that have marked on-road bicycle lanes. The purpose of including these roadways was to determine overall usage and commuting patterns from various points in Worcester. In 2014, the program was broadened to conduct counts at a community requested location. Staff selected locations that would allow the host community to make full use of the data; to assist a project design with bicycle and pedestrian elements, to complement communities' future plans for enhancements such as adding a sidewalk or a crosswalk, or for general knowledge of the importance of bicycle commuting within a community.

Neighborhood SAFE

Neighborhood SAFE is a new, proactive approach that CMRPC is undertaking in order to provide communities with small area infrastructure assessments from a pedestrian and bicyclist safety perspective. CMRPC has launched this effort to achieve the following objectives:

- Increase awareness of bicycling and walkability in communities throughout the region
- Identify safety issues that pedestrians and bicyclists face
- Provide neighborhood safety analysis for all users of the transportation system
- Generate enthusiasm for healthy,
- active transportation options

Bicycle Parking Program

The Central Massachusetts Metropolitan Planning Organization (CMMPO) has committed $100,000 in Transportation Alternatives Program (TAP) funding for installation of bicycle parking racks in the 2015-2018 Transportation Improvement Program (TIP). This program will allow municipalities to expand bicycle parking at a reduced cost. Currently in the planning stage, this program is expected to roll out in 2015 and 2016.

Needs Assessment

The Central Massachusetts Regional Bicycle and Pedestrian Plan was last updated in 2011, this plan serves as a starting point for bicycle and pedestrian network development in the region.

Since the completion of the previous plan in 2011, the region has seen significant interest and growth in improving existing facilities and providing new pedestrian and bicycle facilities. CMRPC staff will update the Regional Bicycle and Pedestrian Plan during 2015-2016 with further analysis and extensive stakeholder outreach. For the purposes of Mobility 2040, preliminary analysis has taken place regarding bicycle and pedestrian related crash clusters as well as shoulder width on Federal Aid Eligible roadways in the region.

Shoulder Width

Preliminary shoulder width analysis via the CMRPC Pavement Management Program has identified over 150 miles of roadway in the region with shoulders wide enough for bicycle accommodation. Staff will use this along with safety-related data to develop baseline analysis for the upcoming update of the Regional Bicycle and Pedestrian Plan.

Safety

The Massachusetts Department of Transportation generates a listing of Highway Safety Improvement Program (HSIP) eligible Auto, Bike, and Pedestrian clusters for the Commonwealth. A list of HSIP eligible locations for the CMRPC planning region was derived from the statewide list. Six (6) bicycle crash clusters have been identified as HSIP eligible for the region. (It should be noted that mainline Interstate crash clusters have been removed from consideration due to jurisdictional issues.) Communities that wish to pursue HSIP funding for a project to improve safety at any of these locations will need to perform a Road Safety Audit (RSA). The Federal Highway Administration defines a Road Safety Audit (RSA) as the formal examination of an existing or future road or intersection by an independent, multidisciplinary team. The purpose of an RSA is to identify potential safety issues and possible opportunities for safety improvements considering all roadway users. Communities can contact CMRPC for further assistance regarding this requirement.

Other Efforts

- Walk Bike Worcester: Staff collaborates extensively with Walk Bike Worcester to promote bicycle projects and policy in the City of Worcester, and increasingly, the CMRPC region. Technical support and analysis is provided for Walk Bike Worcester initiatives, including snow removal efforts during the winter and Complete Streets promotion.
- Safe Routes to School: Staff is a key member of the Worcester Safe Routes to School Taskforce, has participated in extensive fieldwork and technical support efforts for the last two years of planning and execution.

Prioritization

In the CMRPC Region there are six (6) High Priority HSIP Eligible Bicycle Crash Locations (See Table IV-2). For the purposes of the Long Range Transportation Plan, the crash clusters that are HSIP eligible are considered highest priority. There is a large concentration of bicycle and pedestrian HSIP clusters within a half mile of the intersection located at Main Street and Chandler Street/Madison Street in Worcester. This intersection is also located within feet of the highest ranking automobile cluster in the region (#8 Statewide). A recent Road Safety Audit concerning the Main Street/CBD project in Worcester analyzed this high crash location. Furthermore, a MassDOT project to reconstruct the Belmont Street Bridge over Interstate 290 is currently underway. A Road Safety Audit was performed at this location, and the results of that exercise have been incorporated into the reconstruction effort. Please see the *2009-2011 CMRPC Regional Safety Report* for expanded discussion regarding other non-HISP eligible bicycle crash clusters.

Table IV-2: 2009-2011 High Priority Bicycle Clusters in the CMRPC Region

Crash Count	# Fatal	# Injury	# Non-Injury	EPDO	Street # 1	Street #2	Town
10	0	8	2	42	INTERSTATE 290	BELMONT STREET	WORCESTER
9	0	7	2	37	MAIN STREET	OREAD STREET	WORCESTER
10	0	6	4	34	MAIN STREET	MURRAY AVENUE	WORCESTER
6	0	6	0	30	FRANCIS J. MCGRATH BOULEVARD	MADISON STREET	WORCESTER
9	0	5	4	29	CHANDLER STREET	AUSTIN STREET	WORCESTER
8	0	5	3	28	PARK AVENUE	MILL STREET	WORCESTER

Access to Essential Services

CMRPC is working toward promoting interconnected, multimodal transportation networks for all road users. FHWA has made bicyclist and pedestrian safety a high priority, along with providing a network that allows for access to essential services in an efficient manner. FHWA provides the following guidance in regards to this initiative: As part of the transportation planning process, identify transportation connectivity gaps in access to essential services. Essential services include housing, employment, health care, schools/education, and recreation. This emphasis area could include identification of performance measures and analytical methods to measure the transportation system's connectivity to essential services and the use of this information to identify gaps in transportation system connectivity that preclude access of the public, including traditionally underserved populations, to essential services. It could also involve the identification of solutions to address those gaps.

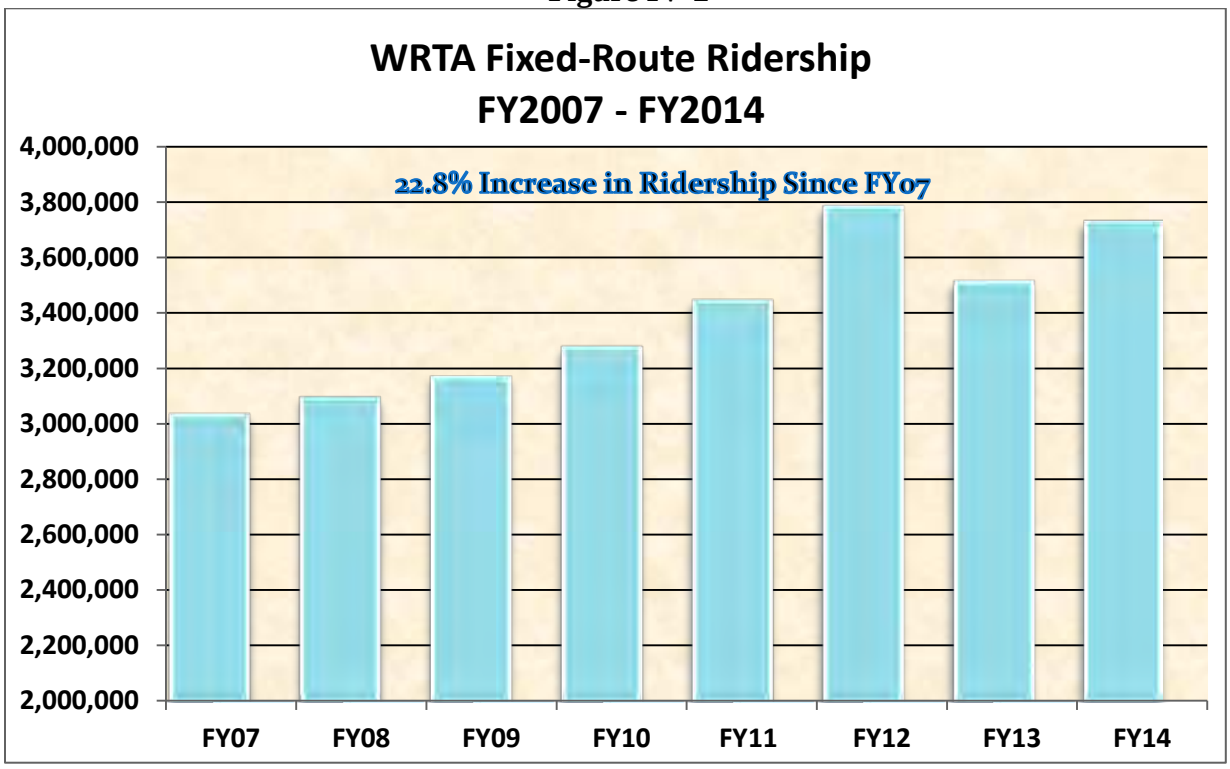
Next Steps

CMRPC staff will begin working on the update to the Regional Bicycle and Pedestrian Plan in the summer of 2015. This update will coincide with the completion of data collection related to shoulder width conditions along federal aid eligible roadways in the region. With Federal Planning Emphasis (PEA) Area Access to Essential Services as an overarching guide, staff will work with regional stakeholders to identify areas where gaps are present in the system. Addressing gaps could include the development and funding of a bicycle sharing program with Congestion Mitigation Air Quality Improvement Program (CMAQ) or Transportation Alternatives Program (TAP) monies. The update Regional Bicycle and Pedestrian Plan will serve as the foundation for the development and expansion of a multimodal network that provides for all users.

Public Transit and Passenger Rail

Public transportation options serve the needs of both commuters and transit-dependent populations. In addition to riders who can choose transit or auto travel, for the transit-dependent populations (those who do not drive or cannot afford a car), public transportation is the only option and it is vitally important to their quality of life. Public transportation includes fixed route bus service, public and client-based paratransit services, taxi and livery services. Intercity public transportation options include intercity bus, commuter rail, and intercity passenger rail. While commuters in the CMMPO region had become less reliant on public transportation over the past 20 years, in recent years that trend appears to be reversing, first associated with improved frequency of commuter rail service, and now commuters returning to local public transit (see Figure IV-2). The trend of associated with this renewed interest in public transit are an aging population, increased cost of gas, and a nationwide trend in being healthy and using sustainable transportation. While there is a national trend toward millennials using more public transportation, that trend has not yet borne out in local transit. The WRTA is intensively working with colleges and schools, but there is not yet data to suggest a shift in mode by these groups. In addition, it is important to recognize the importance that transit can play in making communities more livable.

Figure IV-2



The demand for increased multi-modal healthy, active travel options are being heard by the state and local officials. State operating assistance for local transit service has begun to stabilize after years of cutbacks in service, and local transit officials have made strides in upgrading infrastructure and service features. The state is also in the process of completing transactions with CSX Corporation that will allow for more rail capacity to be available between Worcester and Boston, and plans for more passenger trains in the near future.

Fixed Route Congestion / On-Time Performance

Background

Transit's impact on traffic is greater than its small 0.5% share of total travel would indicate due to the fact that the fixed route system is radially oriented and concentrated along the traffic corridors leading into the Worcester Central Business District (CBD). Given the eastern Massachusetts area's maintenance status for air quality, the City of Worcester's maintenance status for carbon monoxide, and the recent development activities in Downtown Worcester (including the City Square project and the recent MBTA commuter rail service expansion), transit is a viable alternative to auto travel for trips destined to this potentially congested area. The nature of the market segment served by transit is the second reason for transit's important role in the regional transportation system.

Performance Management

As discussed in Chapter II of this report, MAP-21 requires performance based planning related to federal emphasis areas, one of which is congestion. The CMMPO has drafted a number of goals for the Mobililty2040 Long Range Transportation Plan, one of which is congestion related. The objectives for these goals are as follows:

Goal: Reduce Congestion and Improve Mobility for all modes

Objective 1 – Coordinate Improved Incident Management

- Facilitate 1 meeting per year with identified agencies to improve incident detection and clearance time

Objective 2 – Improve Corridor Management Integration

- Reduce average travel delays along 2 identified congested major roadway segments every 5 years
- Improve 2 of the top 20 congested intersections every 5 years to a Level of Service of

"D" or better

Objective 3 – Reduce GHGs Generated by Motor Vehicles in the Region

- Institute one new Park-and-Ride lot in each five year period for Transit & TDM along congested corridors

Analysis

Current Conditions/Congestion Causes

There are many causes of congestion. Some are recurring, such as insufficient capacity, unrestrained demand, or poor signal timing, and some are non-recurring, such as collision incidents, poor weather, work zones, or emergencies. Most of the congestion in the CMMPO region is concentrated in the City of Worcester and the neighboring urban towns. Congestion can be found on local roads, highways, and Interstates.

As stated in the Auto Travel Section on page IV-56, CMMPO staff has completed over 30 Travel Time and Delay studies, analyzed 150 intersections, monitored five Park-and-Ride lots, conducted over 500 traffic counts, and studied nine identified local "Bottleneck" roadway segments since 2010. The analyses of all these data collection activities are compiled and included in yearly progress reports.

Traffic Volumes: Traffic volumes are a major cause of congestion in the region. The highest traffic volumes are on the Interstate highways, especially Interstates 90, 290, and 495. Daily volume surpasses 115,000 vehicles a day on sections of Interstate 290 in Worcester and over 90,000 vehicles a day use Interstate 90 between Sturbridge and Hopkinton. Routes 9, 20, and 146 are lower volume roadways, but still carry between 20,000 and 40,000 vehicles a day on some sections in the urban towns. Rural towns in the western part of the CMMPO region have no roadways with over 10,000 vehicles per day. Transit travels mostly on local roads but Route 9 through the city is a major transit route and congestion is exacerbated by narrow street widths in this area. Transit outside of Worcester also includes use of Routes 9, 20 and 146.

Travel Time Data: Using CMMPO staff's Travel Demand Model, a number of roadway segments throughout the region were identified as "congested" or "projected" to be congested by 2040. Travel Time and Delay studies analyze the speeds on the roadways and how long it takes to get from one place to another. Slower travel speeds are most often located in urban and densely built up areas where congestion occurs. Vehicle speeds fluctuate at different times of the

day as well as different days of the week. When roadway usage exceeds capacity, travel speeds tend to slow significantly, impacting the ability of transit to meet on-time performance.

Turning Movement Counts (TMCs): AM & PM peak periods are analyzed to determine the amount of delay for vehicles traveling through the intersection. A Level of Service (LOS) is calculated for each studied intersection, with an "A" being given to the location with minimal delay progressing downward to an "F" assigned to an intersection with excessive delays or where the demand far exceeds capacity. Many intersections in the planning region have a poor LOS during peak travel periods in the morning and evening. These locations are concentrated in communities with high volume roadways: Auburn, Shrewsbury, Westborough, and Worcester. In addition to regular SUV travel, the amount of heavy vehicles traveling through intersections and on roadway segments can at times decrease speeds while increasing delays.

Bottlenecks: CMMPO staff has analyzed a total of nine bottleneck areas in our Localized Bottleneck Reduction Program with the help of our Transportation Management Systems and Transportation Model. A "traffic bottleneck" is a localized constriction of traffic flow, often on a highway segment that experiences reduced speeds and inherent delays, due to recurring operational influence or a nonrecurring impacting event. A bottleneck can be on high or low volume roadways. Between 2011 and 2014, nine bottleneck locations were analyzed in the region and all of them are served by transit (see Table IV-4 on page IV-62 in the Auto Travel Section).

Weather conditions and construction projects also generate non-recurring congestion and incidents in the region and can greatly affect the daily performance of the local transit system.

Relationship to On-Time Performance (OTP)

The WRTA monitors on-time performance utilizing outside auditors, street supervisors, Automatic Vehicle Locator (AVL) technology and through periodic checks of the on-board vehicle camera surveillance system. The WRTA staff shares its current performance with the WRTA's Advisory Board on a monthly basis.

As noted earlier, several elements contribute to the on-time performance, or non-performance, of transit service:

- General traffic delays
- Mechanical failures
- Poor schedule design
- External emergencies

- Inclement weather
- Construction projects
- Inadequate operator training and control

The WRTA often has little control over external emergencies, inclement weather and construction projects. However, it does have direct responsibility for mechanical failures, schedule design, and operator training and control.

Although traffic delays are beyond its immediate jurisdiction, route schedules are constructed so that sufficient time is available under normal traffic conditions to complete the trip on time. Where street traffic varies, either seasonally or by day of the week and hour of the day, schedules are adjusted accordingly. In addition, MassDOT sponsored projects are becoming increasing sensitive to the needs of transit along congested corridors, as evidenced by the addition of bus bulbs included on the recent Route 12/20 project. MassDOT can also assist in community sponsored projects in helping to make the design more friendly to the needs of transit to travel in congested areas.

In instances where schedule adherence becomes difficult during peak periods by reason of general traffic volume, modifying the schedules for that particular situation or taking steps to avoid the traffic problems causing the congestion are applied. Disruptions due to mechanical failure of equipment cannot be eliminated but should be minimized within the economic limits of sound maintenance practices.

Short headway, heavily traveled routes are less likely to adhere to schedule than longer headway "off peak" service. Accordingly, as headways increase, service should operate closer to scheduled times. This standard, therefore, provides for different schedule adherence based on headway.

Table IV-3 Schedule Adherence
(Targeted Percent of On-Time Service – WRTA Service Standards)

Operating Period	30 Minutes and Less Headway	Over 30 Minutes Headway
Total Peak Period	85%	95%
Base (Non-Peak)	95%	95%
Saturday, Sunday and Holiday	95%	95%

While this is the current standard for schedule adherence, this standard may change now that the WRTA has moved to a real-time data to measure schedule adherence. As such, because of the down to the minute accuracy for on-time performance and the factors described earlier like

traffic delays and others, it is difficult for a small system like the WRTA to maintain 95 percent accuracy in off-peak service.

Action Steps to Address On-time Performance and Congestion

Actions to be taken to maintain or improve on-time performance include:

- Continue to improve method of data collection to accurately monitor and report on the standard for different operating periods of the day
- Enforcement of rules and regulations currently in existence
- Improving initial and continuing operator training
- Consideration of route and scheduling changes
- Changes in equipment assignments (e.g. vehicle rotation)
- Continue to improve communication protocols between WRTA dispatchers, inspectors and operators, as well as local public works departments and local police departments, to minimize service disruptions due to external emergencies, inclement weather and/or construction projects

Needs

There are many congestion improvement options to consider in an effort to maintain on-time performance. Short-term improvements include adjusting signal timing and phasing, maintaining traffic control signage and pavement markings, maintaining good pavement, trimming overgrown vegetation along roadways that impair vehicle sight lines, maintaining roadway drainage structures, and access management techniques. For communication purposes, upgrading or developing electronic systems (radio, telephone, internet) to communicate within the WRTA and among various organizations, as well as developing/updating protocols for how internal and external communications should occur. These improvements can be quickly implemented at a lower cost.

Long-term options that are more costly and take longer to implement include intersection realignment, installation of a modern roundabout, lengthening existing dedicated turn lanes, and incorporating Intelligent Transportation Systems (ITS) capabilities or tools.

Prioritization/Monitoring of Roadways with Fixed Bus Routes

In concert with the goals and objectives drafted by the CMMPO, there are certain roadways and intersections that should be improved first. These prioritized locations should have improvements that will alleviate congestion and reduce travel time, particularly where they impact high transit routes. Performance Measures help determine if a project should be

undertaken as a result; a project that benefits multiple modes or management systems will get a higher priority over a proposed project that only helps one element.

Using various data acquired by the WRTA through its manual and AVL technology will assist in maintaining or improving schedules that meet on-time performance. Identifying the location of critical peak hour delay intersections can help determine which roadway segments should undergo improvements to reduce travel time and potential bottlenecks. Most of the critical locations are in the city of Worcester and the town of Shrewsbury. The remaining few are in the towns of Sutton, Upton, and Webster, of which only Webster is served by fixed route transit.

Improvement of existing Park-and-Ride facilities and the possible addition of more facilities that are connected to transit can help meet the goals of a 5% total automobile VMT reduction and the long term creation of five new Park-and-Ride locations. Further, rideshare programs such as MassRIDES and NuRide will also help with VMT reduction by encouraging travelers to use healthy, active options such as public transit. Travel demand management (TDM) is another way to reduce traffic congestion by including transit options for commuters.

The following are high volume corridors for fixed-route transit as well as primary corridors for roadway congestion during peak travel hours: Main Street, West Boylston Street, Belmont Street, Lincoln Street, Gold Star Boulevard, Grove Street, Highland Street, Chandler Street, Southbridge Street and Pleasant Street. Park Avenue is also a high volume corridor that is not currently used by fixed-route transit in its entirety, but has been identified in the CSA for potential transit service.

Fixed-Route Safety and Security

Background

Safety and security are the two most important aspects of transit service in the region. Safety and security are paramount in all WRTA activities. The WRTA is committed to developing, implementing, and improving strategies, management systems and processes to ensure that all their public transportation activities uphold the highest level of safety and security performance.

Performance Management

As discussed in Chapter II of this report, MAP-21 requires performance based planning with a federal emphasis area of Safety and Security. Mobility2040 recognizes the importance of the Transportation Security and measure progress to achieve the following goals and objectives:

Goal: Improve the Safety and Security of the region

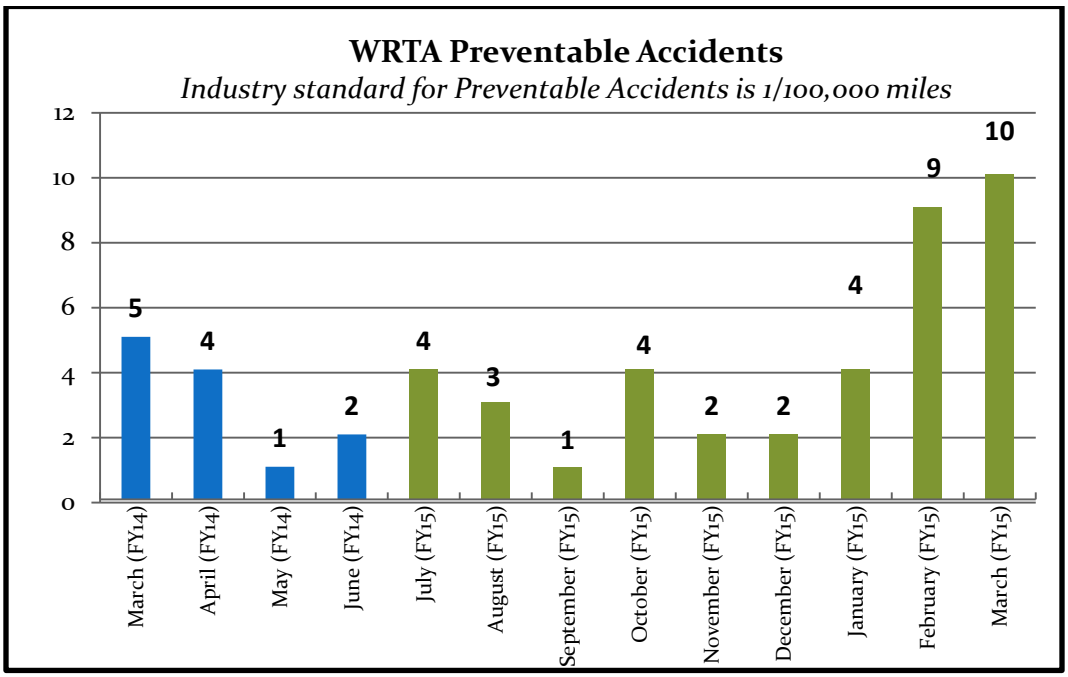
Objective 2: Achieve Industry standards for preventable accidents for transit

- Reduce preventable accident rate (accidents per 100,000 miles) by 10% in 5 years. A preventable accident is defined as one where a driver did not do everything reasonable to avoid the accident.

Objective 3: Enhance Transportation Security Coordination Region wide

- Conduct one regional workshop/tabletop exercise every year to advance evacuation Planning
- Continue involvement with MRPC & Statewide Evacuation Planning efforts

Figure IV-3:



Current Conditions

WRTA Safety Management System (SMS)

The SMS is an organized approach to managing safety, including the necessary organizational structures, safety goals and performance targets, responsibilities and authorities, accountabilities, policies, and procedures for integrating safety into day to day operations.

The SMS has three defining pillars

1. A comprehensive approach to safety that sets the tone for the management of safety, embraces the organization's safety goals, objectives and policies, and, most importantly, senior management's commitment to safety.
2. Structure and tools to deliver the necessary activities and processes to advance safety.
3. A formal system for safety feedback to confirm continuing fulfillment of safety goals, objectives, policy, and standards.

The WRTA fixed route operator, Central Mass Transit Management, Inc. (CMTM), has developed a SMS. The SMS offers a means of preventing accidents by integrating safety into all aspects of CMTM's activities, from planning to operations to maintenance. SMS builds on the following four elements:

- A planned approach to system safety program tasks
- Qualified personnel to accomplish the tasks.
- Authority to implement the tasks through all levels of management.
- Appropriate financial and personnel resources to accomplish the tasks.

WRTA Safety and Security Program Plan (SSPP)

To establish the importance of security and emergency preparedness in all aspects of its organization, the WRTA has developed a Safety and Security Program Plan (SSPP). The SSPP outlines the process to be used by the WRTA to make informed decisions that are appropriate for operations, passengers, employees and communities regarding the development and implementation of a comprehensive security and emergency preparedness program.

The purpose of the plan is to help establish and maintain the Safety and Security Program. It serves as a detailed blueprint for all security activities by:

- establishing how security activities are organized;

- outlining employee and department responsibilities with respect to security;
- instituting threat and vulnerability identification, assessment, and resolution methodologies; and
- setting goals and objectives (including periodic drills and audits of the plan).

Elements included in the SSPP are Emergency Action Plan, Homeland Security, Relocation Procedures, Evaluation of Emergency Preparedness, and Security Committee. The plan is updated continually to record and evaluate past security performance of the system, to identify modifications that are needed, and to establish objectives for the upcoming year.

a) See Something, Say Something™

The "See Something, Say Something™" campaign provides direction on detecting and reporting suspicious behaviors or objects around transit stations and equipment. It is a national campaign that is funded by the Department of Homeland Security and partners with transit agencies to bring awareness to transit users about strange and suspicious activity at stations, platforms and on vehicles. Various media, including public service announcements, posters, pamphlets and videos, are used to spread the message of the campaign and promote a safer and secure transit experience.

Continuity of Operations (COOP) Plan

The Continuity of Operations (COOP) plan for the WRTA presents a management framework, establishes operational procedures to sustain essential functions, and guides the restoration of full functions if normal operations in one or more of the WRTA's locations are not feasible.

The plan was prepared in accordance with Department of Homeland Security (DHS) Headquarters Continuity of Operations (COOP) Guidance Document, dated April 2004, which provides a structure for formulating a COOP plan; Presidential Decision Directive–67, "Ensuring Constitutional Government and Continuity of Government Operations," which requires all Federal departments and agencies to have a viable COOP capability; and Commonwealth of Massachusetts Executive Order No. 144, which requires all Commonwealth agencies to prepare for emergencies and disasters and to provide emergency liaisons to Massachusetts Emergency Management Agency/Organization for coordinating resources, training, and operations.

The document focuses on the basic COOP elements: essential functions, critical systems, alternative facilities, orders of succession, delegations of authority, and vital records. Development of procedures that address the basic COOP elements and work in concert with business continuity and disaster recovery plans allows for uninterrupted delivery of the WRTA's essential functions. This document applies to the full spectrum of threats and emergencies that

may affect the WRTA. Specifically, this COOP plan is based on an event scenario that disrupts the WRTA's essential functions.

Worcester County Evacuation Plan

CMRPC staff, in conjunction with Montachusett Regional Planning Commission (MRPC) under the guidance of the Central Region Homeland Security Advisory Council (CRHSAC), is working on an Evacuation Plan for all of Worcester County. The overall goal of the Evacuation Plan is to provide Worcester County emergency management personnel with a comprehensive Regional Evacuation Plan. Phase 1 was primarily a data gathering procedure. Phase 2 is anticipated to include identification of evacuation scenarios, modeling of evacuation impacts against current conditions, and identification of recommendations for prioritization and implementation of a County-Wide Evacuation Plan. Phase 3 is anticipated to be development of a County-wide Evacuation Plan based on Phase 2 data and recommendations, as well as involvement of stakeholders. Phase 3 would include establishment of communications protocol, and implementation of publicity of such outcomes, including perhaps coded signage and development of standard messaging systems.

Analysis

Safety/Security

As outlined in the Highway Safety section, thirty six (36) of the region's top forty four (44) Highway Safety Improvement Program (HSIP) eligible auto/bike/pedestrian clusters are located in the City of Worcester. Fourteen (14) of the thirty six (36) clusters located in the City of Worcester are along the MA-9 corridor. An additional twelve (12) clusters are located along the MA-122/122A corridor. These three (3) state routes contain "super clusters" of auto/bike/pedestrian crashes that have been collated into the three top crash corridors for the CMRPC region. Within these "super clusters", 22 of the WRTA's 31 fixed-route buses either operate along the corridors or crossover at specific intersections:

- *MA-9 (Belmont/Highland St): West St to Rodney St* (WRTA Routes 3, 24, 24A, and 34 operate along Belmont and Highland Streets for their primary routing. WRTA Routes 8, 14, 18, 23, 26, 30, and 31 cross this corridor at Lincoln Square)
- *Main Street: MLK to May Street* (WRTA Routes 8, 18, 19, 27, and 33 operate along Main Street for their primary routing. WRTA Routes 2, 3, 6, 7 and 9 cross Main Street at various intersections within this cluster)
- *MA-9/12 (Park Ave): Elm St to Chandler St* (No WRTA route operates along Park Avenue, however Routes 2, 6 and 9 cross Park Avenue at the Pleasant Street and Chandler Street intersections)

- *MA-122/122A (Vernon/Madison/Chandler): I-290 to Park Ave* (No WRTA route operates along Madison Street. WRTA Routes 11 and 22 operate through Kelley Square and along Vernon Street. WRTA Routes 6 and 7 operate along Chandler Street. WRTA Routes 4 and 25 cross this cluster at Kelley Square and Madison/Southbridge Streets)

Future Needs

Safety

In 2015, the WRTA will be updating its Safety and Security Program Plan (SSPP). In addition, the WRTA will also update its COOP Plan from its last update in 2009, as well as its SMS to include not only the fixed route system, but also the paratransit system, fixed facilities and vehicle fleet. Development of a full Emergency Response Plan will also be started in 2015. Lastly, implementation of Complete Streets techniques that may occur with roadway projects in the region that will also address safety improvement at bus stop waiting areas will be reviewed as part of a potential project design.

Security

CMRPC and MRPC staff will continue Phase 2 Evacuation planning efforts. Phase 2 will aid jurisdictions in practical application and use of the "Tool Kit'. Phase 2 will continue to align the CRHSAC Evacuation Plan strategies and goals with state evacuation plans.

Fixed Route State of Good Repair

Background

Keeping the regional transit system in a State of Good Repair (SOGR) requires good people, efficient use of funding and management of assets that provide reliable and safe service year-round. SOGR is a key priority at the WRTA and for the CMMPO and both are committed to ensuring the best in safe, reliable, cost-effective and responsive transit services.

Performance Management

As discussed in Chapter II of this report, MAP-21 requires performance based planning on federal emphasis area of Safety and Security. Mobility2040 recognizes the importance of the Transportation Security and measure progress to achieve the following goals and objectives:

Goal: Achieve State of Good Repair

Objective: Maintain fixed route and paratransit vehicles in state of good repair

Performance Measure:

- Replace WRTA fixed route vehicles on a 12-year replacement schedule
- Replace WRTA paratransit vehicles on a five-year replacement schedule

Asset Inventory

Vehicle Fleet

The fixed route provider under contract to the WRTA is Central Mass Transit Management, Inc. CMTM currently operates 53 full size (30', 35' and 40') buses along with an additional 50 vans which are used for paratransit purposes. Of these 53 full size buses, six are brand new Proterra all-electric vehicles. These vehicles are owned by the WRTA.

Figure IV-4: WRTA Proterra All-Electric Bus

Fixed Facilities

a) Union Station Hub

The WRTA constructed a new "hub" next to Worcester's Union Station. The opening of the Hub completed the vision of Union Station being a true intermodal campus where connections between MBTA commuter rail, Peter Pan/Greyhound bus service, Amtrak and local taxi service could be made with ease. The new Hub has an enclosed waiting area, restroom facilities, next bus arrival and departure displays and announcements, ticket vending machines, a Customer Service window, and a Dunkin' Donuts. The building also houses WRTA Administration and PBSI paratransit brokerage staff. The platform area can accommodate up to eight buses at a time and also includes seating, and ticket vending machines.

Figure IV-5: WRTA Union Station Hub in Worcester

b) Maintenance and Operations Center

The WRTA's existing maintenance and operations facility is at 287 Grove Street. In operation since the late 1920s when it was built as a trolley barn, the existing facility performs all of the requirements to keep the fleet in operation. The single-story facility houses CMTM operations, dispatch and maintenance staff offices, six bay bus storage for all 53 buses internally, has 14 Garage Bays and body shop additions, two fuel bays, two wash bays and a van storage facility.

In 2007, state and federal transportation officials discouraged the WRTA from undertaking any large-scale capital improvements on the property and instead encouraged the WRTA to pursue other options. The Federal Transit Administration (FTA) has also told the WRTA that the facility is far outdated and that any additional large-scale capital maintenance should not be undertaken. In August 2007, the WRTA applied to participate in the FTA sponsored Environmental Management System (EMS) Implementation Institute at Virginia Tech seeking EMS ISO 14001 Certification. In June 2010, the WRTA EMS was audited by representatives of the Institute and deemed ready for the ISO Certification process, a testament to the WRTA commitment to environmental accountability.

Figure IV-6: Architect's Rendering of Future WRTA Maintenance and Operations Facility

c) Bus Shelters and Stops

The WRTA has 1,377 bus stops and 42 shelters in its system. Bus stops and shelters are the first physical access points to the bus system. Their placement and condition either entice or deter passengers from using the system.

Figure IV-7: WRTA Bus Shelter

Technology

The WRTA has invested in new technologies for improved service performance and customer information. These technologies include automated passenger counting (APC), automated vehicle announcements (AVA), automatic vehicle locators (AVL) and automatic vehicle maintenance (AVM).

Analysis

A major concern in past years (as reflected in past Regional Transportation Plans) has been the adequacy of Federal Section 5307 monies to meet WRTA capital needs requirements. However, in contrast with ISTEA and TEA 21 levels, but consistent with SAFETEA-LU levels, MAP-21 apportionment levels have been maintained and have allowed the WRTA to complete a very much needed fixed route bus replacement program. While capital monies available to the WRTA are higher than in past years, it also needs to be recognized that the WRTA has had to program capital funds as much as possible to preventive maintenance in order to make up for limited state and local operating assistance.

Average Fleet Age

One measure of SOGR is the average age of the bus fleet. The Federal Transit Administration (FTA) recommends that a transit authority have an average fleet age of six years. In 2014, the WRTA has an average fleet age of 3.18 years. The average fleet age is low because the WRTA purchased a number of new buses in 2008 and 2009, followed by a second round in 2012, 2013 and 2014.

Fixed Facility Condition

Another measure of SOGR is condition of fixed facilities. Preventative maintenance efforts help maintain these assets in good, operating condition for many years, or decades, of service.

a) Union Station Hub

Because the Union Station Hub is a year and a half old, keeping the facility in a SOGR is minimal with preventative and general maintenance efforts.

b) Maintenance and Operations Facility

Because of the deteriorated conditions of the existing Grove Street maintenance and operations facility, the WRTA's largest effort is the design and construction of a new facility to replace the existing garage. In FY 2010, the WRTA received a federal State of Good Repair grant of $39 million, the second largest in the nation, to build the new facility. This new facility will replace the functionally obsolete existing 86 year old facility and, more

importantly, allow for the increased environmental mitigation at the Grove Street site once they have moved to the new location. The new site is located at 42 Quinsigamond Avenue in Worcester and the new facility will be completed in fall 2016. The new site will also be located closer to Union Station and will decreasing deadhead travel time for more efficient operations.

c) *Bus Shelters and Stops*

Because bus stops and shelters are the first physical access points to the bus system, the WRTA makes sure that the shelters are inspected on a monthly basis and any repairs that are needed are made quickly. Bus stops are inspected less frequently but are reported for repair by riders, drivers and/or inspectors. Examples of repair include sign replacements, pole replacements, glass panel replacement in shelters, benches, and full shelter replacement.

Future Needs

With the completion of the WRTA's new maintenance and operations facility, the major capital improvement projects for the system's operation will be complete. Future SOGR efforts for fixed-facilities will focus on maintaining these for many years, even decades, of good service and system reliability.

Replacement, or possible expansion, of the WRTA's existing bus fleet will be the primary focus of new equipment in the coming years. In FY 2016 and FY 2017, the WRTA has programmed six new buses, three in each fiscal year, for fleet expansion. Beginning in FY 2020, the WRTA is expecting to begin replacing its 2008 fixed-route buses.

Fixed-Route Intelligent Transportation Systems (ITS)

Background

Since summer 2012, the WRTA has implemented a state-of-the-art, Intelligent Transportation Systems (ITS) technology as the result of funding received from the American Recovery & Reinvestment Act (ARRA) in 2009. The new system has been installed for both fixed route and paratransit systems, and includes tools for improving the management of the system and tools for riders to obtain real-time information for trip planning and riding. The tools include:

- Automatic Vehicle Locator System
- Data Communications System
- Automatic Vehicle Announcements
- Automatic Passenger Counter System

- Dynamic Message Signs
- Customer Service Online System
- Maintenance Management System
- Web Interface for Real-Time Information

Taken as a whole, the technology implementation has helped the WRTA improve schedule reliability, reduce federal reporting costs, provide detailed information to assist in route planning, and assist the riding public in obtaining real-time information about their trip. Also, the WRTA has implemented a scheduling software program (HASTUS) to improve efficiency and has upgraded its telephone system to take advantage of new computer technology and improved customer service.

Performance Management

As discussed in Chapter II of this report, MAP-21 requires performance based planning. Mobility2040 recognizes the importance of ITS and measures progress to achieve the following goals and objectives:

Goal: Reduce Congestion and Improve Mobility for all modes

Objective 2 - Enhanced Traveler Information (ITS)

- Facilitate the installation of information systems/kiosks at major intermodal locations, such as Union Station. 2 locations every 5 years.
- Expand I-290 ITS Real Time Traffic Management (RTTM). RTTM on I-395 and Route 146 also. Install 2 Variable Message Boards (VMB) every 5 years.

Objective 3 - Improve Corridor Management Integration

- Increase % of overall bus trips with an on time % greater than 90% (leaving hub and end of line). 10% increase over 10 years.
- Install Transit Signal Priority – 5 signals every 5 years.
- Reduce average travel delays along identified congested major roadway segments. 2 every 5 years.
- Improve 2 of the top 20 congested intersections every 5 years to a LOS of “D” or better.

Analysis

New Technologies

Assuring that WRTA passengers are kept informed with the latest information and service updates is crucial to maintaining good public relations and attracting new passengers. These technologies have provided improved information dissemination to bus passengers and include the following:

- Automatic Vehicle Announcements (AVA) – AVA provides clear audio and visual messages for specific stops and locations along a bus route. These announcements can be broadcasted in multiple languages and assist passengers with hearing or visual impairments when riding the bus.
- Variable and Dynamic Message Signs (V/DMS) – The signs located at specific WRTA bus stops throughout the WRTA system and at Union Station provide real-time bus arrival notices to passengers waiting for a bus.
- Automatic Vehicle Locator (AVL) – The AVL system allows bus users, operators, and dispatchers to use mobile device and PC software applications to see where buses are located along its route and when it will arrive at specific stops, to improve schedule adherence

Technologies Related to Improved System Operations

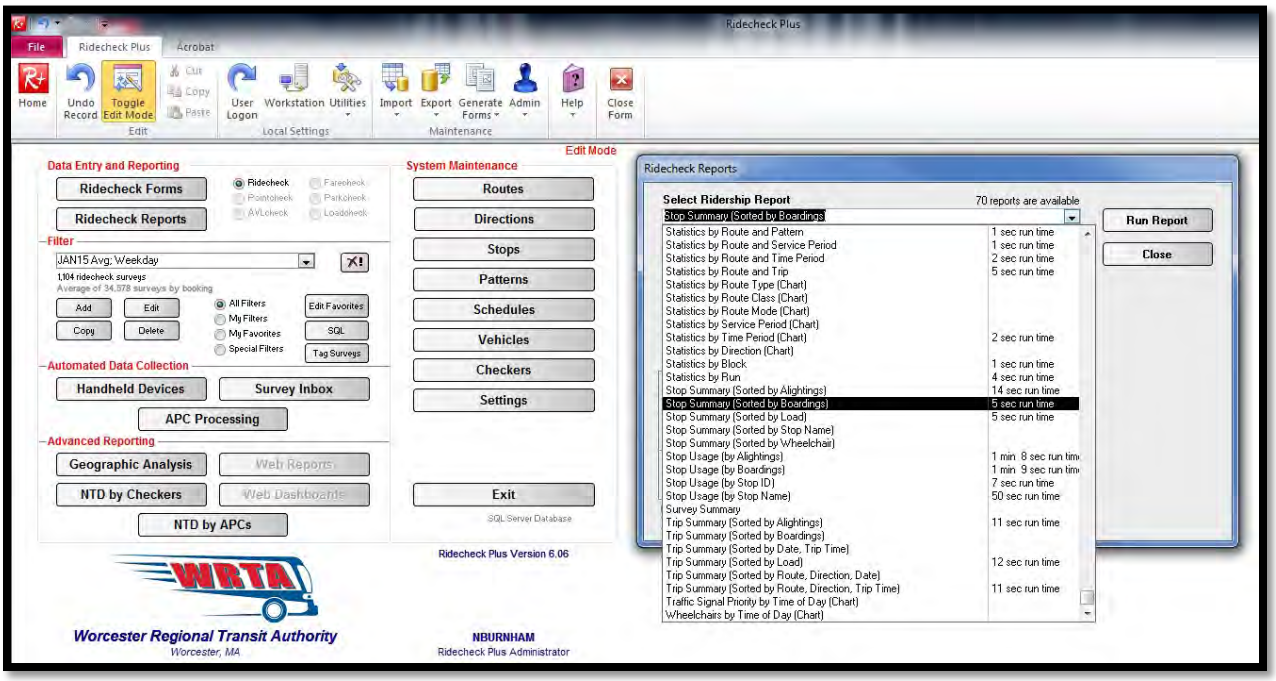
Passengers expect on-time service when using transit. These technologies provide for improved bus operations, on-time performance and reduction in bus passenger boarding times:

- Contactless Fare Collection – Contactless fare collection technology, known locally as "Charlie Card" technology, allows passengers to use pre-paid "smartcards" that can be read by a bus fare box to pay the fare, thereby reducing waiting times to board buses at stops.
- Automatic Vehicle Monitoring (AVM) – AVM measures, monitors, and reports the status of critical systems and components for every bus in the WRTA fleet, allowing the WRTA to meet increased ridership demands through greater operational efficiency.
- Transit Signal Priority (TSP) - TSP technology provides bus service travel time extensions at signalized intersections using devices that communicate with each other. Transit Signal Priority can reduce bus travel times and open congested corridors for future transit service consideration.

Technologies Related to Passenger Data Collection

Obtaining data about the number of passengers on a bus is a crucial performance measure of a specific route. Obtaining this data manually is time consuming and labor intensive. Using Automated Passenger Counting (APC) has allowed the WRTA to obtain accurate data more quickly, counting the number of passengers that board or alight from a bus at a given stop along the route. APC data has provided WRTA planners and operations staff more accurate passenger information by route over a daily, weekly, monthly and yearly period, as well as provide accurate passenger information for National Transit Database (NTD) reporting. This information, along with AVL and other operations data, is being used to determine the performance of a given route and where adjustments may need to occur.

Figure IV-8: WRTA's RideCheck Plus APC Program



Specific Locations for These Technologies

The technologies outlined above were installed on the WRTA's fleet of 52 buses in spring 2013. These include AVA, AVL, AVM, APC and "Charlie Card" technologies. V/DMS technologies were installed at the new Union Station "bus hub" that was completed in May 2013. TSP has a longer planning horizon, but has been tested at a specific intersection in Worcester, and can be expanded, pending funding availability.

Needs

During the update to the Central Massachusetts Regional ITS Architecture in 2011, the regional transportation stakeholders identified key regional needs for fixed route transit among other modes. These needs, specific to Central Massachusetts, are:

- Congestion Management
- Transit Efficiency
- Efficient Use of Existing Infrastructure
- Economic Development
- Safety and Security
- Communications Infrastructure
- Traveler Information
- Use of ITS Data

Multi-function Program Areas were also developed as part of the ITS Architecture Implementation Plan and they include:

- Electronic Toll Collection Integration for Parking – Future initiative for MassDOT, MBTA, and community parking facilities that have controlled access.
- Regional Fare Card Integration for Parking – Future initiative for MassDOT, MBTA, and community parking facilities that have controlled access.
- CAD/AVL (Computer Aided Dispatch/Automated Vehicle Locator) for Transit Vehicles – Currently being deployed by the Worcester Regional Transit Authority (WRTA)
- Traffic Signal Priority – A future initiative for reducing congestion delays for WRTA buses.
- Regional Fare Card – Deployed in spring 2012, this initiative provides an interoperable fare medium allowing riders to use the WRTA, MBTA and other participating RTAs.

It is expected that the recently formed Regional ITS Planning and Coordinating Committee will be actively working to prioritize and explore implementation strategies for these Multi-function Program Areas.

Prioritization

As identified in the 2011 Worcester Regional Mobility Study, Transit Signal Priority (TSP) is a valuable Intelligent Transportation Systems option for Central Massachusetts' urban core. TSP would help reduce vehicle emissions through more efficient bus system operations and added potential for drivers to avoid congested routes thus creating less gridlock for buses that have to

travel these routes. More efficient (and potentially more expansive) bus service provides a benefit to EJ populations along routes where TSP is implemented. Businesses along these corridors could benefit from TSP implementation through added transit service. While additional corridors, such as Park Avenue and Shrewsbury Street, are being assessed by the WRTA, City of Worcester and the CMMPO for future TSP implementation, a final strategy has yet to be determined.

Fixed-Route Access to Essential Services

Background

Transit access to essential services such as employment, education, health care, public services, access to food and recreational activities is one of the WRTA's primary goals. The WRTA's recently revised Service Standards include the following statement: "It shall be the policy of the WRTA to space routes such that within approximately 90% of the densely populated areas of the core city, Worcester, residents shall reside within one quarter (1/4) of a mile from a bus route." In order to accomplish this, the service standards include the guidelines for route design. The following factors are considered essential for route design: population density (4,000 persons per square mile), employment density (200 employees or more), route and corridor spacing, demographics, service equity, interline enhancement, route directness, proximity to trip generators and destinations, and intermodal connectivity.

The CMMPO completed a Coordinated Public Transit-Human Services Transportation Plan (CPT-HST). Since the completion of this plan, MassDOT has been working with CMMPO staff and the Central Massachusetts Regional Coordinating Council (RCC) to implement portions of the CPT-HST plan in the region.

The new WRTA Hub at Union Station provides easier intermodal connections to intercity bus (Peter Pan / Greyhound), intercity rail (Amtrak) and commuter rail (MBTA), expanding transit access within and outside the region. The new Hub has administrative offices for the WRTA, customer service space, waiting areas, ticket / pass machines and restrooms. The facility holds up to eight full-size buses at a time and provides improved accessibility and transfer capabilities between fixed-route and paratransit service from its previous hub location at Worcester's City Hall.

Furthermore, WRTA is actively engaging the community, including riders, community groups, colleges and major employers; as a result, WRTA service is more tailored to patron's identified needs. Also informational materials have been tailored to each group, as an example: (1) routing

information for college students with key destinations; (2) combination schedules showing multiple routes for major employers; (3) employee address matching to provide personalized routing information; (4) improved opportunities for riders to obtain schedules and passes; (5) mapping of social service agencies in relation to the fixed route system; (6) travel training of personnel, particularly human resource and resident advisor staff, in using the bus; (7) surveys, either to employers or riders on how to improve or expand fixed-route service.

Performance Management

As discussed in Chapter II of this report, MAP-21 requires performance based planning related to federal emphasis areas, one of which is livability and access to essential services. Staff has developed the following goals and objectives that address access to essential services for all of the region's transportation modes:

Goal 1: Reduce Congestion and Improve Mobility for All Modes

Objective 4: Improved Transportation Accessibility for all modes

- Increase the number of ADA-compliant roadways and intersections. Two locations every five years.
- Improvement in the bicycle and pedestrian network within ½ mile of transit stations – for the top 10 high boarding and alighting locations. Two locations every five years.
- Increase average frequency on core-routes to 10 minutes. Two routes every five years.

Goal 6: Equitable Transportation for all populations

Objective 1: Provide access to essential services; minimize burdens and maximize benefits associated with low-income and minority areas

- Increase the number of ADA-compliant intersections by 10% over 10 years
- Improve traveler information at Union Station complex by installing Information Systems/Kiosks
- Increase access to essential services for EJ areas within 45 minutes of travel time by 10% over 10 years
- Inventory the bicycle and pedestrian network within a ½ mile of top boarding transit locations in the next two years

Objective 2: Consider Geographic Equity of transportation projects across the region

- Maintain an average fleet age of 5-6 years for transit vehicles in the region
- Equity (based on distribution of projects) in sub-regional project programming (by mode) at least one TIP project over each five year period

- Equity for Environmental Justice identified areas (by mode). One project that benefits an EJ area over each five year period

Analysis

In 2014-15, the WRTA conducted a Comprehensive Service Analysis (CSA) which was completed by URS Corporation. The CSA included a transit market analysis, which relates socio-economic data with population density, vehicle availability, land use and employment locations within WRTA's service region, as well as a number of service improvement recommendations. A route by route analysis showed that *"overall WRTA's service is deployed to accommodate the transit needs of the region's workforce."* URS recognized that there are areas where service could benefit from modifications to better meet demand and improve access to employment. In that regard, URS mentioned the benefits of having late night service and the desirability to expand weekend service to better suit current employment trends.

The major themes that came from the service recommendations of the CSA were the following:

- Elimination of specific routings (partial segments or full routes) due to low performance and re-focusing existing operating funds into more productive routes
- Development of a concept to better integrate and streamline service along Main Street
- Extended hours and increased frequency to create "clock face schedule", specifically on weekend service days
- Establishment of fixed-route service along Park Avenue
- Establishment of "cross-town" routes from the east and west side of Worcester
- Creating routes with more direct service between origins and destinations (e.g. QCC to UMASS)

As identified in the CSA analysis, the WRTA provides fixed-route service to all but five areas of its region with a current or future potential for high transit demand. These five areas are located in the towns of Barre, Douglas, Dudley, Holden and West Brookfield. All of them exhibit clusters of current or future employment activity, service agencies and schools. Several of these towns have higher than average percentage of households without a vehicle, low income populations and elderly populations. Most of these towns do not meet the density threshold favorable for transit service and will require further analysis to determine when transit service should be implemented in these areas.

Needs

Based on the CSA's recommendations and analysis, there is an expressed need to increase the number of routes operating for weekend service, as well as schedule improvements along mainline corridors for improved access to essential services that are only available now on weekdays. In this regard, the WRTA has identified Main Street and Lincoln Street as mainline corridors that could benefit from higher frequencies. Doing so would require adjusting route schedules of mainline core routes, which are currently interlined/paired together. Also, the WRTA has identified the need for more "cross-town" opportunities beyond the current bus pairings and outside the "hub-and-spoke" alignment of routes.

Other service opportunities exist on the fringe of the current fixed-route system. These options would increase mobility options, provide more access to essential services and create new mode options not currently available. A potential transit corridor has been identified in the southernmost part of the region, connecting the towns of Dudley, Southbridge, Sturbridge and Webster. Input gathered for the CSA from multiple public meetings, surveys and meetings with community organizations coincide with the need to connect these towns.

Other areas with identified needs are the towns of North Brookfield, Ware and West Brookfield. In the CMRPC *Rural 11 Prioritization Project* study, the Town of Warren was identified by community leaders as a potential connection hub for the Pioneer Valley Transit Authority (PVTA) and the WRTA. A rural route connecting Ware and the Brookfields was also identified. Work done by the Central Massachusetts Regional Coordinating Council (RCC) also identified the need for more transit service in the western part of the region, mainly for access to job opportunities. The CSA also supplements this perceived need by also recommending a connection with the PVTA's Ware Shuttle from West Brookfield.

Lastly, improved transit services for college students were also identified as a need in the CSA. The Higher Education Consortium of Central Massachusetts (HECCMA), a consortium of the 10 colleges in the WRTA region, is currently in conversations with the WRTA to improve transit access to select colleges in Worcester.

Next Steps and Prioritization

The travel demand model will be used to analyze recommendations from the CSA. New bus routes, existing route expansions and route changes will be coded into the model to understand the new ridership and the travel behavior of the commuters. The results of the model will be used

to prioritize the implementation of the recommendations. Funding availability will play a major role in the timeframe for implementation.

Paratransit

Overview

Extensive paratransit services are offered in the region by the WRTA. The WRTA offers two types of paratransit services: one is paratransit service as required by the Americans with Disabilities Act (ADA) and the second is non-ADA paratransit service. ADA paratransit service, as required in areas surrounding WRTA fixed route bus services, is offered through the WRTA's van division and through contracts with local Councils on Aging (COAs), private non-profit providers and one for-profit provider (Yellow Cab). The WRTA offers non-ADA paratransit service to elders and people with disabilities outside of the ADA service area that extends to the most rural parts of the WRTA service area through similar contracts. While ADA paratransit service mirrors hours and days of fixed-route service, non-ADA level service is offered on weekdays generally from 8am-4pm. Changes in demographics, housing trends, advances in medical technology, and the passage of the Americans with Disabilities Act (ADA) in 1990 have impacted the availability, need, and value of paratransit to the Central Massachusetts region.

Since 2010, federal New Freedom and state Community Transit Grant funds have allowed moderate expansion of WRTA paratransit service hours in the suburbs including Shrewsbury, Millbury, and Mendon as well as rural areas of central Massachusetts offering midday service to Worcester. Additional transportation services are offered through Rehabilitative Resources Inc. of Sturbridge during periods of time when vehicles are not in use for their own programs. ReadyBus, operated by SCM Elderbus, also offers expanded service hours in their rural service area to accommodate work trips. All of these efforts were grant funded using both New Freedom and Job Access Reverse Commute (JARC) funding. Additional smaller services also exist but they are either client/program based or payment is required for the full cost of service.

Efforts of the South Central Massachusetts Regional Coordinating Council (RCC) are helping to further identify gaps in service by assembling key parties in the paratransit, employment, elder, disability, and other special interest groups to discuss common problems and possible solutions. The RCC has identified both employment transportation and rural transportation as significant service gaps.

The WRTA has also worked with the MetroWest Regional Transit Authority (MWRTA) to provide reciprocal paratransit trips for passengers travelling just over RTA boundaries. This arrangement allowed passengers to maintain employment in areas along neighboring WRTA and MWRTA communities. Similar arrangements can be made with any of the neighboring transit authorities.

Five communities in the Blackstone Valley area are not part of any regional transit authority, but provide limited paratransit service. This service is provided through the local COA during town business hours on weekdays through volunteer or town-employed drivers.

Paratransit Congestion

Background/Current Conditions

Congestion in paratransit often has two meanings; one is congestion to the passenger and the other is congestion of the roadway. Regarding congestion to the passenger, this means that multiple pick-ups or drop offs are done at one location (a hospital for example) with minimal effort made to use the vehicles to their highest potential. While a paratransit system should be using their vehicles to their maximum potential and have (at a minimum) 2.5 passengers per hour, often it is lower than this. Regarding congestion of the roadway, the main causes of this are insufficient roadway widths/lanes, poor signal timing and non-recurring items such as collision incidents, poor weather, work zones or emergencies. These factors contribute to decreased on-time performance for paratransit, while also limiting the number of trips that can be delivered, increasing the cost of service delivery and impacting rider experience.

Analysis

The WRTA has made extensive progress in reducing site congestion of paratransit trips by incorporating more communities into their Mobility Management Model (MMM). Originally piloted by two Councils on Aging, this program has expanded to include eight communities: Auburn, Boylston, Leicester, Northborough, Oxford, West Boylston Westborough, and Worcester. Successes in this effort have helped WRTA to gain efficiencies and reduce overall costs by attempting to maximize use of the existing WRTA infrastructure.

The WRTA has been able to leverage the availability of paratransit service by receiving funding from the New Freedom program to encourage passengers to switch some of their paratransit trips to the more cost-effective fixed route system. The WRTA offers a Travel Training program that is designed to assist a rider's transition to the fixed route system. The one-on-one instruction

program is offered free of charge and available to all members of the public. One goal is to motivate people to try using the fixed route service for some or all of their trips versus paratransit. Fixed-route service fares are less expensive and also offer the convenience of not needing to pre-schedule trips.

Because paratransit trips are scheduled by pick-up and drop off, on-time performance is important to provide good service. As noted earlier and in the fixed-route section, several elements contribute to the on-time performance, or non-performance, of paratransit service:

- General traffic delays
- Mechanical failures
- Poor scheduling/dispatching of trips
- Inadequate operator training and control
- External emergencies
- Inclement weather
- Construction projects

Operators, including the WRTA often have little control over external emergencies, inclement weather and construction projects. However, it does have direct responsibility for mechanical failures, scheduling/dispatching of trips and operator training and control.
Although traffic delays are beyond its immediate jurisdiction, trips are scheduled so that sufficient time is available under normal traffic conditions to complete the trip on time. Since street traffic varies by season, day of week and hour of day, trip times may be adjusted accordingly.

In instances where trip schedules become difficult during peak periods by reason of general traffic volume, vehicles can modify their routing and can take steps to avoid the traffic problems causing the congestion. Disruptions due to mechanical failure of equipment cannot be eliminated but should be minimized within the economic limits of sound maintenance practices.

Steps to Address On-time Performance and Congestion

- Improvements to method of data-collection which monitors and reports on the standard for different operating periods of the day
- Enforcement of rules and regulations currently in existence
- Improvements to initial and continuing operator training
- Prepare schedule for changes in equipment assignments (e.g. vehicle rotation)

- Improve communication protocols between WRTA dispatchers, inspectors and operators, as well as local public works and local police departments, to minimize service disruptions due to external emergencies, inclement weather and/or construction projects
- Encourage reduced use of single occupant vehicles, and increased use of multi-modal, healthy, active transportation options, to reduce overall roadway congestion

Needs

Continued success of the MMM depends on further automation of the scheduling and dispatching responsibilities, in addition to a well trained staff.

There are many congestion improvement options to consider in an effort to maintain on-time performance. These short-term and long-term improvements are explained in detail in other chapters and are will additionally improve the delivery of paratransit service.

Paratransit Safety and Security

Background

Safety and security are the two most important aspects of transit service delivery in the region. Safety and security are paramount in all WRTA activities. Just like for the fixed-route system, the WRTA is committed to developing, implementing, and improving strategies, management systems and processes to ensure that paratransit service is upheld to the highest level of safety and security performance.

Current Conditions

WRTA paratransit drivers are trained to proficiency on Accessible Lift Use and Securement, Defensive Driving and Disability Awareness. This is done by in house trainers or through the Massachusetts Rural Transit Assistance Program. A newly developed program attempts to standardize paratransit driver training throughout the State.

The WRTA Safety Management System, developed by Central Mass Transit Management (Inc.), offers a means of preventing accidents by integrating safety into all aspects of CMTM's activities, from planning to operations to maintenance. Further, the WRTAs Safety and Security Program Plan serves as a detailed blueprint for all security activities. Additionally, the Continuity of Operations Plan (COOP) for the WRTA presents a management framework, establishes operational procedures to sustain essential functions,

and guides the restoration of full functions if normal operations in one or more of the WRTA's locations are not feasible. Finally, the CMRPC staff, in conjunction with Montachusett Regional Planning Commission (MRPC) under the guidance of the Central Region Homeland Security Advisory Council (CRHSAC), is working on an Evacuation Plan for all of Worcester County. The overall goal of the Evacuation Plan is to provide Worcester County emergency management personnel with a comprehensive Regional Evacuation Plan.

More information about these efforts is available in the fixed-route section.

Analysis

As outlined in the Highway Safety and Fixed-Route Transit sections, three state routes contain "super clusters" of auto/bike/pedestrian crashes that have been collated into the three top crash corridors for the CMRPC region. Within these "super clusters", almost all of the WRTA's paratransit services either operate along the corridors or crossover at specific intersections.

Needs

In 2015, the WRTA will be updating its Safety and Security Program Plan (SSPP). In addition, the WRTA will also update its COOP Plan from its last update in 2009, as well as its Safety Management System (SMS) to include not only the fixed route system, but also the paratransit system, fixed facilities and vehicle fleet. Lastly, development of a full Emergency Response Plan will also be started in 2015. CMRPC and MRPC staff will continue Phase 2 Evacuation planning efforts. Phase 2 will aid jurisdictions in practical application and use of the "Tool Kit'. Phase 2 will continue to align the CRHSAC Evacuation Plan strategies and goals with state evacuation plans.

Paratransit State of Good Repair

Background/Current Conditions

Keeping the paratransit system in a State of Good Repair (SOGR) requires efficient use of funding and management of assets that provide reliable and safe service year-round. SOGR is a key priority at the WRTA and for the CMMPO and both are committed to ensuring the best in safe, reliable, cost-effective and responsive paratransit services. The paratransit fleet is operated through a number of sub-contractors with the WRTA including Central Mass Transit Management, Inc., SCM Elderbus and ten local Councils on Aging (COAs). There are 50 vans

which are used for paratransit purposes. All of these vehicles are owned by the WRTA. The average fleet age of a paratransit van in FY 14 was 3.58 years, far below the recommended 5 years.

Figure IV-9: WRTA Paratransit Van

Source: Westborough Patch

The WRTA has invested in new technologies for improved service performance and customer information. These technologies include Strategen ADEPT software for paratransit reservations and scheduling and Mentor Ranger for GPS, vehicle location and communication.

Analysis

Just as for fixed-route service, a major concern in past years (as reflected in past Regional Transportation Plans) has been the adequacy of Federal Section 5307 monies to meet WRTA capital needs requirements. However, in contrast with ISTEA and TEA 21 levels, but consistent with SAFETEA-LU levels, MAP-21 apportionment levels have been maintained and have allowed the WRTA to complete a very much needed paratransit replacement program. While capital monies available to the WRTA are higher than in past years, it also needs to be recognized that the WRTA has had to program capital funds as much as possible to preventive maintenance in order to make up for limited state and local operating assistance.

One measure of SOGR is the average age of the van fleet. The Federal Transit Administration (FTA) recommends that a transit authority have an average fleet age of five years. In 2014, the WRTA has an average van fleet age of 3.58 years. The average fleet age is low because the WRTA purchased a number of new vans in 2008, 2009, 2010, 2011, 2013 and 2014.

Needs

Replacement, or possible expansion, of the WRTA's existing van fleet will be the focus of new equipment in the coming years. WRTA has requested six new replacement vans in 2015 to replace vans that have exceeded their useful life in an effort to keep the fleet age below five years.

The WRTA has a well-established policy of maintaining a state of good repair with their paratransit vans by establishing a schedule for both routine maintenance and vehicle replacement. The WRTA makes efforts to keep the average van fleet age below five years. Funding for replacement vans comes from MassDOT through their Community Transit Grants program or through WRTA 5307 capital funds.

Paratransit Intelligent Transportation Systems (ITS)

Background/Current Conditions

StrataGen ADEPT platform is being used to schedule, route, dispatch and report paratransit service. Additionally, the Mentor Ranger is being used as a GPS for the driver and an automatic vehicle locator. It is also used to provide drivers with real-time and updated passenger pick-up information. The WRTA has also formalized its customer service reporting by using Sales Force as its complaint filing and follow up system.

Analysis

Mentor Ranger, the vehicle location technology, has improved service delivery by allowing reservationists, schedulers and dispatchers the ability to 'see' where the vehicles are so they can redirect vehicles to a pick up location if needed. This is especially useful when there is road congestion. On time pickups can be improved overall using this technology.

StrataGen ADEPT is critical for obtaining data about trips, and hours and miles of service. Obtaining this data manually is time consuming and labor intensive. Using Strategen ADEPT has allowed the WRTA to collect and verify this information in a timely and reliable manner for daily planning and for monthly and annual reporting to National Transit Database.

Needs

Further expansion of the Mobility Management Model to more paratransit providers would allow for more efficiencies. Expansion to neighboring communities should be a priority.

Paratransit Access to Essential Services

Background/Current Conditions

As part of the Governor's Executive Order 530, Massachusetts formed the Statewide Coordinating Council on Community Transportation to address transportation issues. From that Council, regional coordinating councils were formed including the South Central Massachusetts Regional Coordinating Council (RCC). The RCC was able to identify four gaps in service to address: information dissemination, employment transportation, rural transportation, and service with more assistance. The RCC prepared a listing of available transportation resources within its service area and locations of information dissemination.

Paratransit service allows people with disabilities and elders' access to essential services such as medical and employment along with recreational activities. Currently the RCC has formed subcommittees to address the needs of employment transportation and rural transportation while recognizing that there may be overlap in service needs. Without closing these gaps, access to essential services remains limited.

The WRTA recently built a new Hub of operations which serves as the focal point of most WRTA routes and houses the paratransit eligibility, call taking, reservations and scheduling. This is also the home of the customer service center. As the focal point of input from the public, the office is responsible for gathering information and forwarding it to the proper department for follow up. Response time is monitored closely. The Hub is located next to Union Station in Downtown Worcester, which serves as an intermodal transportation center with access to the MBTA commuter rail, intercity bus, and intercity train. Information on these services is discussed in greater detail in the appropriate sections.
In response to public input, WRTA began four deviated fixed route services in Grafton, Northbridge, Paxton and Westborough. These deviations deviate up to ¾ mile for ADA eligible people with disabilities and will soon be deviating for the general population. Deviations are limited to two per trip.

Analysis

Using the StrataGen ADEPT system, tracking performance such as on time performance, late pick-ups, cancelled trips, and no-shows becomes much easier. Using Sales Force, the WRTA Customer Service staff can track and respond to complaints in a more efficient way which reduces duplication of efforts and is particularly helpful in monitoring suggested new service locations.

In 2014-15, the WRTA conducted a Comprehensive Service Analysis (CSA) which was completed by URS Corporation. While the primary focus of the CSA was on the WRTA's fixed-route system, URS included a transit market analysis, which relates socio-economic data with population density, vehicle availability, land use and employment locations within WRTA's service region, as well as a number of service improvement recommendations. URS recognized that there are areas where service could benefit from modifications to better meet demand and improve access to employment, particularly for transportation disadvantaged populations.

As identified in the CSA analysis, the WRTA provides fixed-route service to all but five areas of its region with a current or future potential for high transit demand. These five areas are located in the towns of Barre, Douglas, Dudley, Holden and West Brookfield. All of them exhibit clusters of current or future employment activity, service agencies and schools. Several of these towns have higher than average percentage of households without a vehicle, low income populations and elderly populations. Most of these towns do not meet the density threshold favorable for fixed-route transit service and will require further analysis to determine when and what type of transit service should be implemented in these areas, including possible paratransit type services.

Needs

Currently, the towns of Hardwick and Ware have expressed a need to improve access to essential services and have discussed these issues at RCC meetings. As towns at the edges of RTAs and not within the WRTA, both are isolated from the core of their respective service areas. Additionally, both are rural towns with limited service which significantly adds to the vehicle hours and miles, and reduces efficiencies. Working to change and improve the service will require assistance at the local, regional, and state levels.

Other service opportunities exist on the fringe of the current fixed-route system. These options would increase mobility options, provide more access to essential services and create new mode options not currently available. A potential transit corridor has been identified in the southernmost part of the region, connecting the towns of Dudley, Southbridge, Sturbridge and Webster. Input gathered for the CSA from multiple public meetings, surveys and meetings with community organizations coincide with the need to connect these towns.

The WRTA has also developed five distinct ADA paratransit eligibility applications in an effort to simplify the process for applicants and ask targeted questions about how the applicant's disability prevents them from using the fixed route service. With hope of having one application

for all Massachusetts RTAs, MassDOT has formed a Common Application committee. This application is currently under review.

WRTA is also planning on joining other RTAs on Ride Match software to improve online service information dissemination in a one-stop-shopping model. Ride Match would provide the public information on available public and private alternatives to get from point A to point B within communities and across the state.

Intercity Bus

Transit travel between cities is of great importance to the Central Massachusetts region because of the area's density, and its geography within New England. The Central Massachusetts region is the second largest urbanized area in the state and the third largest urbanized area within New England, behind Boston and Providence, respectively. The region is significant to intercity transit travel as a trip generator with the City of Worcester serving as a focal origin and destination point for travelers. Union Station, located within downtown Worcester, serves as the regional intermodal center for passengers taking the MBTA commuter rail, Amtrak passenger rail, and Peter Pan and Greyhound intercity bus routes. Directly adjacent to Union Station is the WRTA regional transit hub, which links the local public transportation provider to the other intercity transit connections.

Background

The providers of intercity bus service compete for passengers directly against airlines, passenger rail, and single-occupancy vehicles. This service is particularly important to rural areas and smaller communities that lack nearby air and passenger rail service. According to industry officials, intercity bus routes are gaining riders due to lower fares than the alternatives, and bus carriers are responding by adding routes and schedules to accommodate ridership demand. Such as the case with Union Station in Worcester, intercity buses operate from centrally located terminals, offering frequent service between major cities to make bus travel more convenient.

Peter Pan Bus Lines – Background and Current Conditions

Peter Pan Bus Lines, Inc., a private carrier based in Springfield, Massachusetts, is one of two major intercity carriers providing service in the Central Massachusetts region. One of the largest privately owned intercity bus companies in the country, Peter Pan is among the most innovative with express service and passenger amenities such as e-ticketing and online schedules. New buses in its fleet offer enhanced technological equipment that provides passengers with access to

on-board Wi-Fi, electrical outlets, and additional "leg room". The company expanded its ITS capabilities to include on-board GPS, ticket scanners, and security cameras for bus drivers. At its terminals, real-time information updates using scrolling LED signs and monitors and auditory announcements are made for customers to stay informed while traveling.

Figure IV-10: Peter Pan Bus

Source: www.peterpanbus.com

Greyhound Lines – Background and Current Conditions

Greyhound Lines, Inc. is the second major intercity carrier providing service in the Central Massachusetts region and serves over 3,800 destinations throughout North America. Greyhound has partnerships with a number of independent bus lines throughout the country, which provide complementary service to Greyhound's existing schedules and link to many of the smaller towns and rural areas within its national route system.

Figure IV-11: Greyhound Bus

Source: abcnews.go.com

Analysis

Between Peter Pan and Greyhound, service is provided to regional destinations at certain times of the day by either carrier from Central Massachusetts. Service is available to most major cities in the Northeast, with frequency of service varying from hourly service to Boston to only two roundtrip trips per day to Providence. For example, there are 15 one-way trips from Worcester to Boston starting at 5:45am and the last trip departing at 10:35pm. Intercity public transportation bus services are available from Worcester to Fitchburg and Leominster, operated by the Montachusett Regional Transit Authority (MART) utilizing Worcester's Union Station as an origin and destination point.

At the State level, the MassDOT Rail and Transit Division formed the BusPlus+ program, in which MassDOT provides new buses to private operators in exchange for expanding intercity and commuter transportation options. The operators provide improvements to regional transportation services and are responsible for all maintenance and operating costs. Peter Pan and Greyhound, as recipients of BusPlus+ funding, expanded services to increase commuter trips from Sturbridge to Boston in early 2014 and Worcester to Boston in September 2014.

Future Needs

Due to Peter Pan and Greyhound operating as private carriers versus public transportation, the CMMPO is not aware of their most pressing future needs. Like other public transportation, providing funding for maintaining operations is vital and determines system preservation and any plans for potential expansions.

Areas of importance to regional bus mobility are to fill gaps in the existing system and expansion to meet growth in future demand. Some geographic areas and times of day could benefit from bolstered or added service in the Central Massachusetts region, such as:

- Increase service from Worcester to Providence, specifically at times which would benefit potential commuters.
- Alter the current Worcester to Boston schedule to service its Sturbridge stop in the AM for potential commuters in the CMMPO West (the Brookfields, Spencer, Warren) and Southwest (Charlton, Southbridge, Sturbridge) sub-regions; the current schedule provides trips only in the mid-day and evening time periods.
- Consider a 'Park and Ride' stop in Palmer along the Worcester to Springfield route, which would provide access to intercity bus service for communities in the CMMPO West sub-region (the Brookfields, Hardwick, Warren).

Further statewide needs and other potential services for both public transportation and regional bus services were identified in the *Massachusetts Regional Bus Study,* completed by CTPS in 2013.

Intercity Rail

Background

MBTA

Under contract with the MBTA since July 1, 2013, Keolis Commuter Services runs commuter trains throughout Eastern Massachusetts. The MBTA's Framingham-Worcester commuter rail line operates between Worcester's Union Station and Boston's South Station, about 44 miles in length. Worcester's Union Station serves as the hub of passenger rail activity in the Central Massachusetts region. Of the seventeen stations on this commuter rail line, three are located within the CMMPO region in North Grafton, Westborough, and Worcester. In 2012, CSX moved their freight operations from Allston to Worcester and transferred ownership of the Framingham to Worcester track segment to the MBTA. With complete control of the line, the MBTA has increased the amount of trips from Boston to Worcester, implemented a new schedule, installed a third track to allow for the expansion, and announced plans to perform track maintenance to improve on-time performance.

Figure IV-12: MBTA Commuter Rail

Source: Jonathan Wiggs/Boston Globe Staff~~/~~

Amtrak

Amtrak provides intercity passenger rail service nationwide, serving more than 500 destinations in 46 states over 21,000 miles. Similar to other passenger railroad systems, Amtrak receives

public funding for capital costs and operating expenses, but is managed as a for-profit corporation. The only Amtrak service that operates through Central Massachusetts is the *Lake Shore Limited*, which begins its route in Chicago and travels eastbound through Cleveland, Buffalo, Albany, Springfield, Worcester, and concludes in Boston.

Figure IV-13: Amtrak Siemens Electric Locomotive

Source: http://blog.amtrak.com/2013/05/new-amtrak-locomotives-the-facts/0513_siemens_pressday_highrez_img_8746/

Analysis

As noted in the 2012 RTP document, there were a number of issues concerning commuter rail service in Central Massachusetts, from limited opportunities for reverse commuting to poor on-time performance. As part of an overall state effort to continue investing in multi-modal, healthy, active transportation options, the Framingham-Worcester commuter rail line saw an expansion in recent years. In 2014, responding to customer feedback and continuous increases in ridership, the MBTA expanded the amount of round trips between Worcester and Boston to 20 on weekdays and nine on weekend service. The overall schedule was altered to add service during peak times and accommodate reverse commuting (Boston to Worcester).

According to MBTA ridership statistics, in FY2013 the Framingham-Worcester commuter rail line was second out of 14 commuter rail lines for total (inbound and outbound) boardings on a typical day with 16,293 boardings. Worcester's Union Station ranked eighth out of 133 commuter rail stations ranked by inbound (Worcester to Boston) boardings on a typical weekday (1,475). This results in a 22% increase in inbound boardings on a typical weekday from November 2012 statistics (1,206). Between Worcester, Grafton (724), and Westborough (759),

the Central Massachusetts stations represent 26.8% of a typical weekday for inbound boardings on the Framingham-Worcester commuter rail line (11,044)[1].

The *Lake Shore Limited* only serves Worcester's Union Station twice a day, once in the mid-day as it departs from Boston towards Chicago, and once in the evening as it departs from Chicago towards Boston. According to Amtrak ridership statistics, the *Lake Shore Limited* served 373,331 passengers in FY14, a 5.6% decrease versus FY13 adjusted. In FY14, Worcester's Union Station served 8,439 passenger trips (inbound boardings and outbound alightings). Out of the eleven stations in Massachusetts, Worcester ranks ninth in station usage, ahead of Pittsfield (7,541), and Framingham (2,154), respectively[2].

Future Needs

As referenced earlier, providing funding for maintaining operations is vital and determines system preservation and any plans for potential expansions. While the CMMPO does not program funding for either the MBTA commuter rail or Amtrak, they are actively involved in passenger/commuter rail discussions and any future expansion studies/plans.

The Framingham-Worcester commuter rail line continues to have issues with on-time performance. In the past six months (May-October 2014), the line averages an 86% on-time adherence (81.7% May-July, and 90% August-October)[3]. The line suffers from summertime speed restrictions due to the steel tracks "de-stressing", the inability to withstand heat. MassDOT unveiled plans to improve travel times on the line, with work begun in 2014 between Worcester and Grafton and is anticipated to be completed in 2016.

In addition to the MBTA, passenger/commuter rail service between Worcester and Providence has been discussed. The Boston Surface Railroad Co. and the Providence and Worcester Railroad are in the initial stages of conducting a study with the purpose of creating a commuter rail service between the two cities. The projected route would include only one additional stop in Woonsocket, Rhode Island and is anticipated to be a 70-minute trip time.

MassDOT has partnered with its sister agencies in Vermont and Connecticut to initiate a study of the "Inland Route", which would examine a second passenger rail service from Boston to Worcester, Springfield, Hartford, and New Haven, Connecticut. The study would likely include

[1] MBTA, Ridership and Service Statistics: July 2014, http://www.mbta.com/uploadedfiles/documents/2014%20BLUEBOOK%2014th%20Edition.pdf
[2] Amtrak, Amtrak Fact Sheet FY14 State of Massachusetts, http://www.amtrak.com/pdf/factsheets/MASSACHUSETTS14.pdf

[3] MBTA, MBTA ScoreCard Archive, http://www.mbta.com/about_the_mbta/scorecard/default.asp?id=18476

potential improvements and recommendations for upgrades to the existing route for higher-speed standards, similar to Amtrak's *Lake Shore Limited*.

Although the MBTA commuter rail service area covers 175 communities, some geographic areas and times of day could benefit from expanded or added service in the Central Massachusetts region, such as:

- Connections to other Regional Transit Authorities (RTA's) at suburban MBTA commuter rail stations are non-existent and would promote inter-modality in the region. For example, the WRTA operates community shuttles to the Grafton and Westborough stations, and would benefit to foster a connection with the MWRTA at either the Westborough or Southborough station.
- Extension of commuter rail service from Worcester to Springfield.
- Examination of passenger/commuter rail service from Worcester to Providence.
- Improved on-time performance.

Auto Travel

Congestion

Background

MassDOT predecessor agencies, the MPOs, the MBTA, other RTAs and a prior ride share contractor initially developed the Massachusetts Congestion Management Process (CMP) (previously called Congestion Management "System") as a cooperative effort. The team was charged with the responsibility for the overall design of the Commonwealth's CMP as well as the development and evaluation of various strategies or improvement options. The Technical Team also selected standard performance measures and congestion monitoring techniques to be used statewide. Although considered a statewide system, CMMPO staff has been responsible for both developing and maintaining the planning region's CMP within the flexible framework originally established by the Technical Team.

The CMP is a systematic approach, collaboratively developed and implemented throughout a metropolitan region that provides for the safe and effective management and operation of new and existing transportation facilities through the use of demand reduction and operational management strategies. The CMP provides information to decision-makers on system performance and the effectiveness of implemented strategies. Although major capital investments are still needed to meet travel demand, the CMP also develops lower cost strategies that complement capital investment recommendations. The result is a more efficient and effective transportation system, increased mobility, and a leveraging of resources. The intent of the CMP is not only to address existing congestion, but also to prevent congestion from occurring elsewhere. The CMP includes other programs and activities such as the Localized Bottleneck Reduction Program (LBRP) and MassDOT Park-and-Ride Lot Usage monitoring.

CMMPO staff conducts the preparatory work and scheduling needed to collect all pertinent data necessary to maintain the region's ongoing CMP program. Travel Time and Delay studies are conducted on identified CMP focus roadway segments, defined either analytically or through the public outreach process. Data needed to analyze the operations of the critical intersections identified along the focus roadway segments is also collected through the CMP effort. Peak period Turning Movement Counts (TMCs) are conducted at critical intersections in the planning region.

Performance Management

As discussed in Chapter II of this report, MAP-21 requires performance based planning related to federal emphasis areas, one of which is congestion. The CMMPO has drafted a number of goals for the Mobililty2040 Long Range Transportation Plan, two of which are congestion related. The objectives for these goals are as follows:

Objective 1 – Coordinate Improved Incident Management

- Facilitate one meeting per year with identified agencies to improve incident detection and clearance time

Objective 2 – Improve Corridor Management Integration

- Reduce average travel delays along 2 identified congested major roadway segments every 5 years
- Improve two of the top 20 congested intersections every 5 years to a Level of Service of "D" or better

Objective 3 – Reduce GHGs Generated by Motor Vehicles in the Region

- One percent vehicle miles traveled (VMT) reduction in each 5 year period
- Institute one new Park-and-Ride lot in each five year period for Transit & TDM along congested corridors

Analysis

Since 2010, CMMPO staff has completed over 30 Travel Time and Delay studies, analyzed 150 intersections, monitored five Park-and-Ride lots, conducted over 500 traffic counts, and studied nine identified local "Bottleneck" roadway segments. The analyses of all these data collection activities are compiled and included in yearly progress reports. The most recent progress reports can be found at http://www.cmrpc.org/transportation-planning-documents.

Traffic Volumes: As shown in Figure IV-14, the highest traffic volumes are on the Interstate highways, especially Interstates 90, 290, and 495. Daily volume surpasses 115,000 vehicles a day on sections of Interstate 290 in Worcester. Also, over 90,000 vehicles a day use Interstate 90 between Sturbridge and Hopkinton. Routes 9, 20, and 146 are lower volume roadways, but still carry between 20,000 and 40,000 vehicles a day on some sections in the urban towns. Rural towns in the western part of the CMMPO region have no roadways with over 10,000 vehicles per

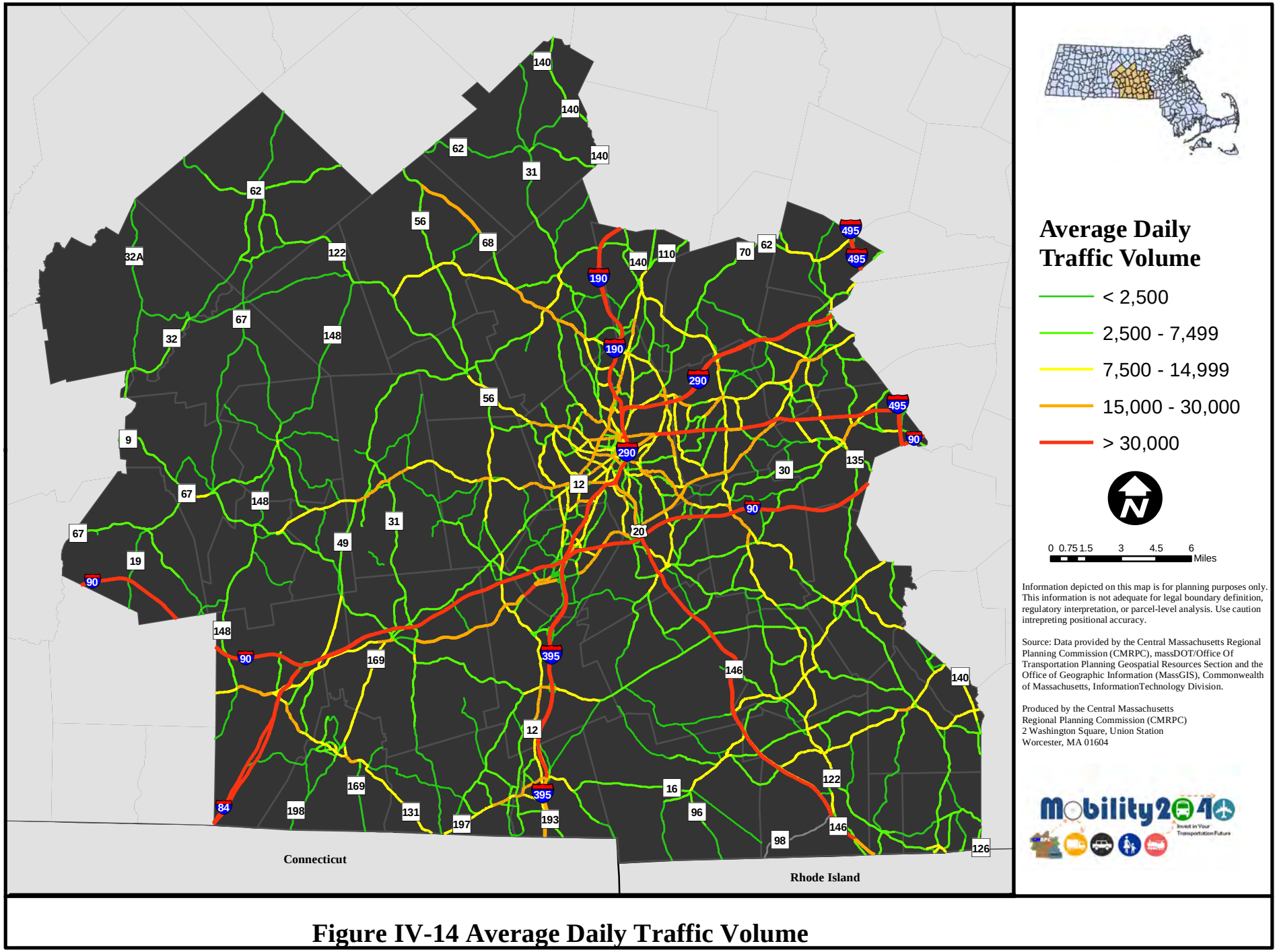

Average Daily Traffic Volume
< 2,500
2,500 - 7,499
7,500 - 14,999
15,000 - 30,000
> 30,000
0 0.75 1.5 3 4.5 6
Miles
Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution intrepreting positional accuracy.
Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT/Office Of Transportation Planning Geospatial Resources Section and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, InformationTechnology Division.
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Figure IV-14 Average Daily Traffic Volume

day. For additional traffic volumes see CMMPO staff's Daily Traffic Volume report or visit the MassDOT website.

Travel Time Data: Using CMMPO staff's Travel Demand Model, a number of roadway segments throughout the region were identified as "congested" or "projected" to be congested by 2040. Travel Time and Delay studies analyze the speeds on the roadways and how long it takes to get from one place to another. Slower travel speeds are most often located in urban and densely built up areas where congestion occurs. Vehicle speeds fluctuate at different times of the day as well as different days of the week. When roadway usage exceeds capacity, travel speeds tend to slow significantly. Figures IV-15 & IV-16 show observed travel speeds for roadway segments that were studied between 2010 to 2014.

Turning Movement Counts (TMCs): Numerous intersections have been studied by CMMPO staff over the years. The AM & PM peak periods are analyzed to determine the amount of delay for vehicles traveling through the intersection. A Level of Service (LOS) is calculated for each studied intersection, with an "A" being given to the location with minimal delay progressing downward to an "F" assigned to an intersection with excessive delays or where the demand far exceeds capacity. Many intersections in the planning region have a poor LOS during peak travel periods in the morning and evening. These locations are concentrated in communities with high volume roadways: Auburn, Shrewsbury, Westborough, and Worcester. In addition to regular single-occupant vehicle (SOV) travel, the amount of heavy vehicles traveling through intersections and on roadway segments can at times decrease speeds while increasing delays.

Bottlenecks: In 2008, FHWA and FTA recommended that MPOs identify the top three bottleneck areas in their region. Since then, CMMPO staff has analyzed a total of nine bottleneck areas in our Localized Bottleneck Reduction Program with the help of our Transportation Management Systems and Transportation Model. A "traffic bottleneck" is a localized constriction of traffic flow, often on a highway segment that experiences reduced speeds and inherent delays, due to recurring operational influence or a nonrecurring impacting event. A bottleneck can be on high or low volume roadways. Table IV-4 shows the bottleneck locations that CMMPO staff has studied since 2011.

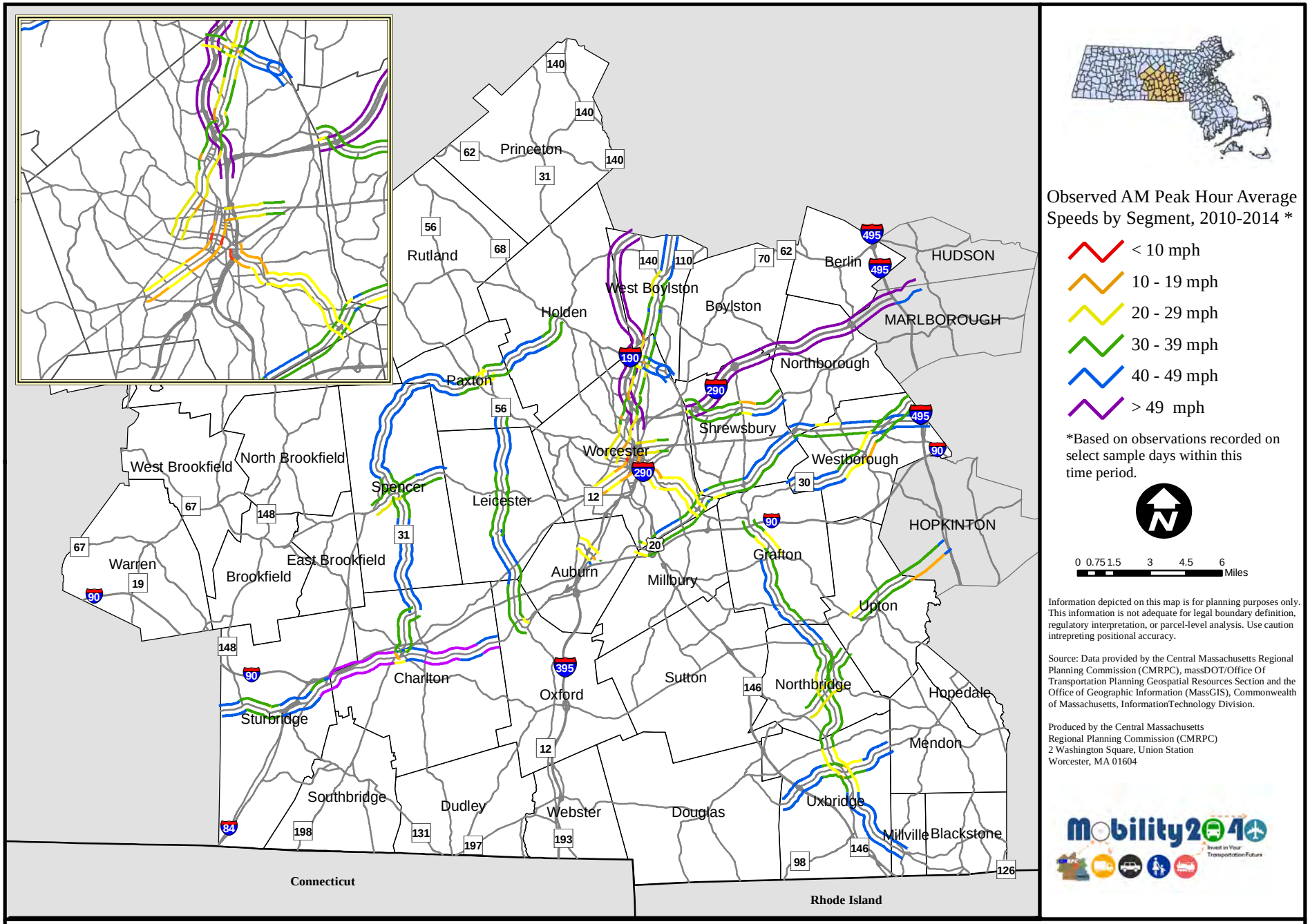

Figure IV-15 Observed AM Peak Hour Travel Speeds

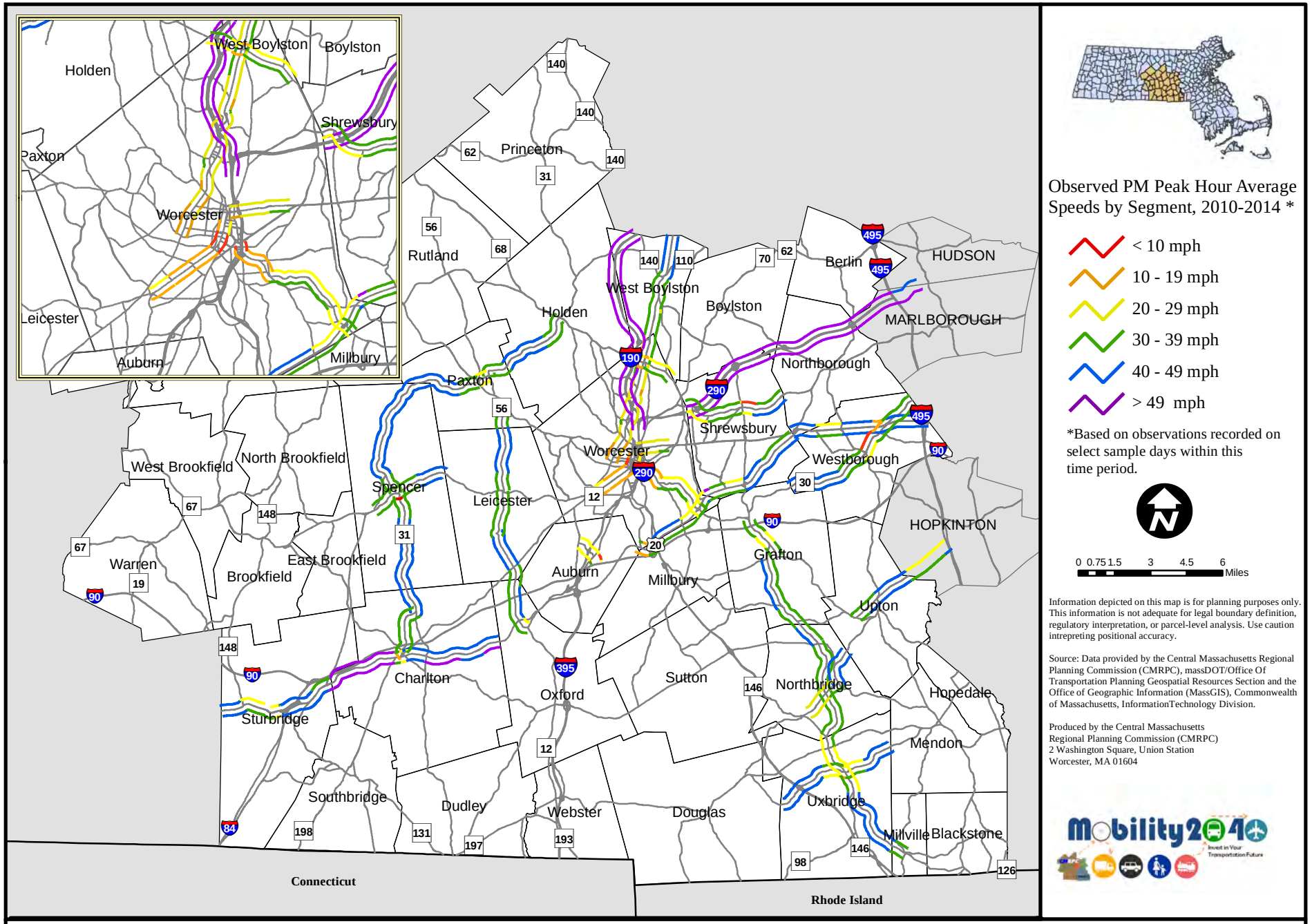

Figure IV-16 Observed PM Peak Hour Travel Speeds

Table IV-4: Localized Bottleneck Reduction Program

City/Town	Location	Year Analyzed
Northbridge	Route 122 @ Church Street	2011
Spencer	Route 9 @ Route 31	2011
Worcester	Belmont Street @ I-290 Ramps (Exit 17)	2011
Charlton	Route 20: Between Route 169 & Route 31	2013
Oxford	Route 12 @ Sutton Avenue @ Charlton Street	2013
Westborough	Route 9 @ Lyman Street	2013
Auburn	Auburn Street: Between I-290 (Exit 9) & Brotherton Way	2014
Grafton	Route 122/140: Between Snow Road & Providence Road	2014
Worcester	Route 12 @ East & West Mountain Street	2014

Park and Ride: CMMPO staff has been monitoring the Berlin Park-and-Ride lot usage since 1999. In 2013, analysis began on an additional four lots. Table IV-5 shows the five Park-and-Ride lots that have been studied. Three of the lots have over 100 spaces and the remaining two have fewer than 50. All lots are well utilized and are located near major highways and interstates. Additional Park-and-Ride information can be found on the MassDOT website at http://www.massdot.state.ma.us/highway/TrafficTravelResources/ParkandRideMap.aspx.

Table IV-5: MassDOT Maintained Park-and-Ride Lots in the CMRPC Region

Community	Location/Address	Capacity
Berlin	Rte 62 at I-495, Exit #26	45
Auburn	Mid State Drive Adjacent to I-90, Exit #10	135
Millbury/Worcester	Rte 20 at I-90, Exit #10A	446
Millbury	Rte 122 at I-90, Exit #11	140
Sturbridge	Rte 131 at I-84, Exit #3 (Bethlehem Lutheran Church Lot)	50

Needs Assessment

As the analysis of intersection and roadway segments are completed, the resulting data is added to CMMPO staff's list of encountered peak hour delay. This table ranks the intersections based on the total number of minutes that drivers as a group wait at the intersection during the AM + PM hours. Currently, 287 intersections are included in the list. The average total peak hour delay calculated from the list is 1,588 in-car minutes per hour. 74 of the 287 intersections caused delays that were above average. Based on the above mentioned data collection activities, there

are various roadway deficiencies that need to be further analyzed and improvements that should be made, whether they are short-term or long-term in nature. The complete list of encountered delays for the 287 intersections can be found in the latest CMP Progress Report,

Park-and-Ride lots are used to reduce the number of vehicles on the roadways. The more people that carpool, the fewer vehicle miles traveled. The Auburn, Berlin, and Sturbridge lots are heavily used and are usually near capacity. The remaining two lots in the town of Millbury are only half utilized.

There are many causes of congestion. Some are recurring, such as insufficient capacity, unrestrained demand, or poor signal timing, and some are non-recurring, such as collision incidents, poor weather, work zones, or emergencies. Most of the congestion in the CMMPO region is concentrated in the City of Worcester and the neighboring urban towns. Congestion can be found on local roads, highways, and Interstates. There are many improvement options to consider. There are short-term improvements such as adjusting signal timing and phasing, maintaining traffic control signage and pavement markings, maintaining good pavement, trimming overgrown vegetation along roadways that impair vehicle sight lines, maintaining roadway drainage structures, and access management techniques. These improvements can be quickly implemented at a low cost. Also for consideration are other options that are more costly and take longer to implement. Some of these are intersection realignment, installation of a modern roundabout, building additional lanes to increase capacity, and incorporating Intelligent Transportation Systems (ITS) capabilities or tools. See CMP Mitigation Toolbox for other ideas on relieving congestion (http://www.cmrpc.org/congestion-management-process), all of which may be considered in the region from time to time.

Prioritization

In concert with the goals and objectives drafted by the CMMPO there are certain roadways and intersections that should be improved first. These prioritized locations should have improvements that will alleviate congestion and reduce travel time. Performance measures help determine if a project should be undertaken as a result; a project that benefits multiple modes or management systems will get a higher priority over a proposed project that only helps one element.

Using the peak hour delay table for critical intersections in the planning regions, we find the top 20 locations that should be considered top priority for the region. Figure IV-17 shows the locations of these top 20 congested intersections as well as the Park-and-Ride lots and bottleneck locations. The location of these intersections can also help determine which roadway segments

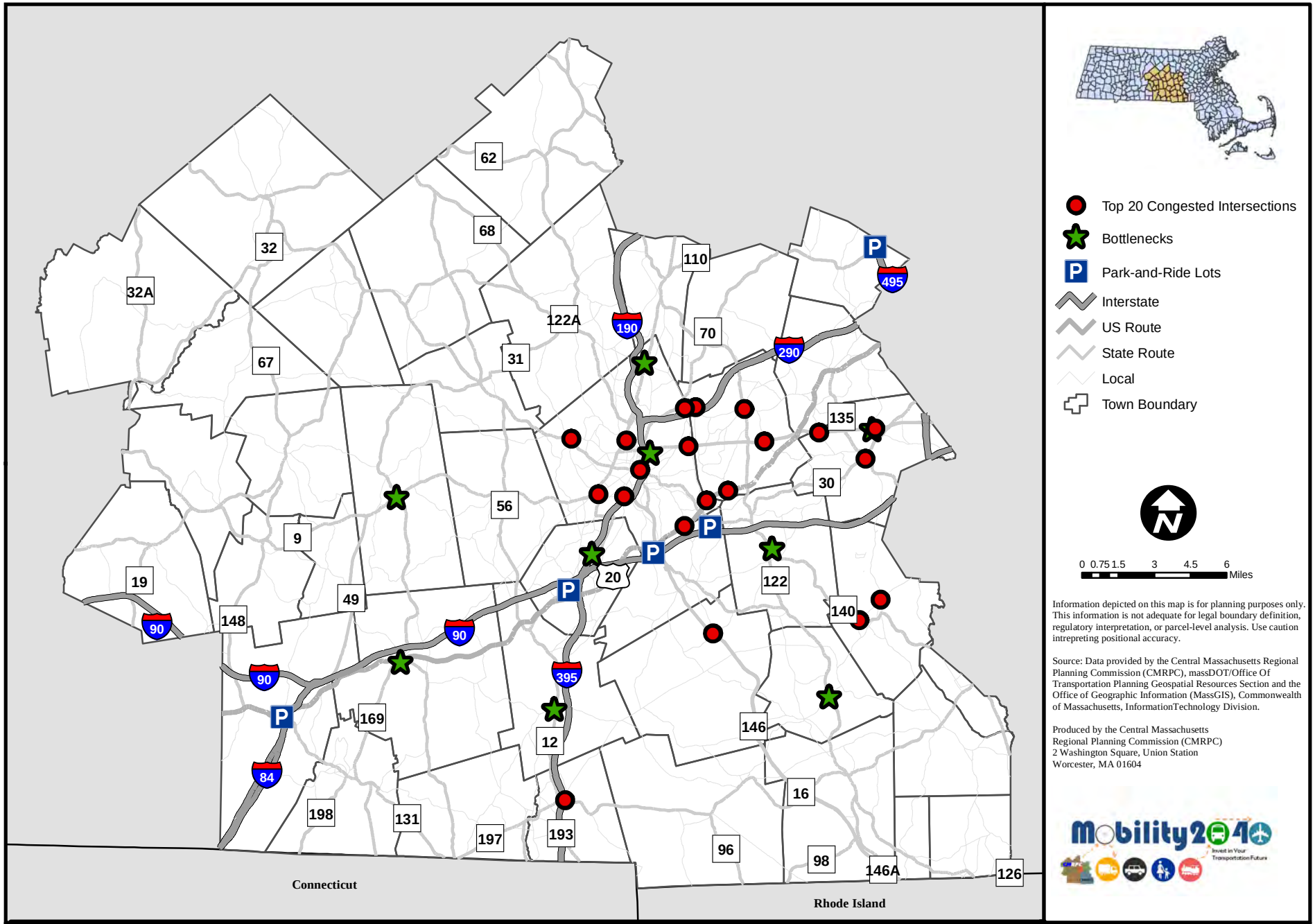
Top 20 Congested Intersections
Bottlenecks
Park-and-Ride Lots
Interstate
US Route
State Route
Local
Town Boundary
0 0.75 1.5 3 4.5 6
Miles
Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution intrepreting positional accuracy.
Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT/Office Of Transportation Planning Geospatial Resources Section and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, InformationTechnology Division.
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Figure IV-17 CMP Focus Locations

should undergo improvements to reduce travel time and potential bottlenecks. The following table only includes what CMMPO staff has analyzed to date. There could potentially be other congested intersections in the region that will be on a future priority list. Most of the critical locations are in the City of Worcester and the town of Shrewsbury. The remaining few are in the towns of Sutton, Upton, and Webster. Ten of these locations should be addressed by 2040 along with ten nearby congested roadway segments. Table IV-6 is the list of the top 20 congested intersections. The total peak hour delay included in the table represents the total number of minutes that drivers as a group wait at the intersection during the AM + PM peak hours. By addressing the congestion issues at these intersections, travel flow for the nearby roadway segments would potentially be alleviated.

Table IV-6: Top 20 Congested Intersections Included in Regional CMP

Community	Intersection	Total Peak Hour Delay
Worcester	Belmont St/Lake Ave	12275
Webster	I-395 NB Ramps/Route 16/Sutton Rd	12080
Worcester	Foster St/Francis J McGrath/Franklin St/Green St	10908
Upton	High St/Hopkinton Rd/School St/Westboro Rd	10862
Worcester	Chandler St/Mower St/Pleasant St	10656
Upton	Route 140/Hartford Ave/Maple Ave	10601
Worcester	Cambridge St/Southbridge St	10501
Shrewsbury	Route 9/South St	9819
Worcester	Park Ave/Salisbury St	9388
Sutton	Route 146/Boston Rd	9340
Westborough	Route 9/Lyman St	8907
Worcester	Cambridge St/Main St/Webster St	8800
Shrewsbury	Main St/N Quinsigamond Ave/Holden St	8563
Worcester	Route 20/Massasoit Rd	8381
Westborough	Route 30/Church St/School St	7795
Worcester	Route 20/Sunderland Rd	7611
Worcester	Plantation St/Lincoln St	7306
Westborough	Route 9/Otis St	6976
Shrewsbury	Route 140/Main St	6802
Shrewsbury	Route 20/Lake St	6803

Improvement of existing Park-and-Ride facilities and the possible addition of more areas can help meet the goals of a 5% total VMT reduction and the long term creation of five new Park-and-Ride locations. Further, rideshare programs such as MassRIDES and NuRide will also help

with VMT reduction by encouraging travelers to use options such as ridesharing, vanpooling, public transit, bicycling, and walking. Travel demand management (TDM) is another way to reduce traffic congestion. Managing traffic demand is about providing travelers, regardless of whether they drive alone, with travel choices, such as work location, route, time, mode, and variable pricing.

Safety

Background

The Central Massachusetts Metropolitan Planning Organization recognizes the importance of transportation safety planning for all agencies and users of the regional transportation system. The organization's transportation safety planning efforts employ a multi-modal strategy: encompassing roadway, transit, bicycle, pedestrian, and rail travel throughout the Central Massachusetts region.

Starting in 2007, states were required to have a State Highway Safety Planning Program (SHSP) that identified and analyzed safety problems and opportunities in order to use Highway Safety Improvement (HSIP) funds for new eligible activities under 23 USC 148. Moving Ahead for Progress in the 21st Century (MAP-21), the current Federal transportation appropriations bill, continues HSIP in order to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State owned public roads and roads on tribal lands. The HSIP program requires a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance. According to MassDOT, an HSIP eligible activity is any strategy, activity or project on a public road that is consistent with the data-driven SHSP and corrects or improves a hazardous road location or feature, or addresses a highways safety problem.

The Massachusetts Strategic Highway Safety Plan (SHSP) was developed in consultation with Federal, state, regional, local, and private sector safety stakeholders, and uses a data-driven, multidisciplinary approach involving the 4 Es of safety (e.g., engineering, education, enforcement, and emergency response) to identify the plan's statewide goals, objectives, and emphasis areas. The Massachusetts SHSP was originally released in 2006, as a comprehensive safety plan/framework for reducing fatalities and serious injuries related to the surface transportation network. In 2012, the Commonwealth undertook a revision to expand and improve upon the significant accomplishments in traffic safety and reductions in fatalities and serious injuries Massachusetts has achieved since the plan was first developed.

The updated Massachusetts SHSP is consistent with requirements outlined in the most recent Federal transportation legislation, MAP-21. One requirement in MAP-21 is to establish goals and performance measures. Goals in the Massachusetts SHSP include:

- Reduce motor vehicle fatalities and hospitalizations by 20 percent in the five-year period following adoption of the SHSP (Short-Term Goal);
- Halve the number of fatalities and serious injuries by 2030 (Interim Goal); and
- Move Toward Zero Deaths and eliminate fatalities and serious injuries on the roadways (Long Term Goal).

Performance Management

As discussed in Chapter II of this report, MAP-21 requires performance based planning related to federal emphasis areas, one of which is safety. New safety performance measures have been proposed related to MAP-21 as the five year rolling averages for total number of fatalities and serious injuries, and rates of fatalities and serious injuries per one hundred million Vehicle Miles Travelled (VMT), and are applicable to all public roads regardless of ownership or functional classification.

Following in the footsteps of MAP-21 emphasis areas and the Commonwealth's SHSP, CMRPC has adopted draft safety goals for the upcoming Mobility2040 Long Range Transportation Plan.

Objective 1 - Reduce the number & rate of Fatal & Injury crashes in the region

- Reduce number of fatalities by 10% in 10 years
- Reduce number of serious injuries by 10% in 10 years
- Reduce rate of fatalities (fatalities per 100 million VMT) by 10% in 10 years
- Reduce rate of serious injuries (serious injuries per 100 million VMT) by 10% in 10 years

Objective 2 - Achieve Industry standards for preventable accidents for transit

- Reduce preventable accident rate (accidents per 100,000 miles) by 10% in 5 years

Analysis

From 2009-2011 there were approximately 32,500 crashes in the CMRPC region. Forty-two (42%) percent of the region's crashes occurred within the City of Worcester. This compares with forty-five percent (45%) of the region's crashes occurring in Worcester from 2006-2008. Eighty-

six percent (86%) of all crashes were located in the Census designated Urbanized Area. This compares with an urbanized area share of ninety one percent (91%) of all crashes in 2006-2008.

Figure IV-18: Regional Highlights

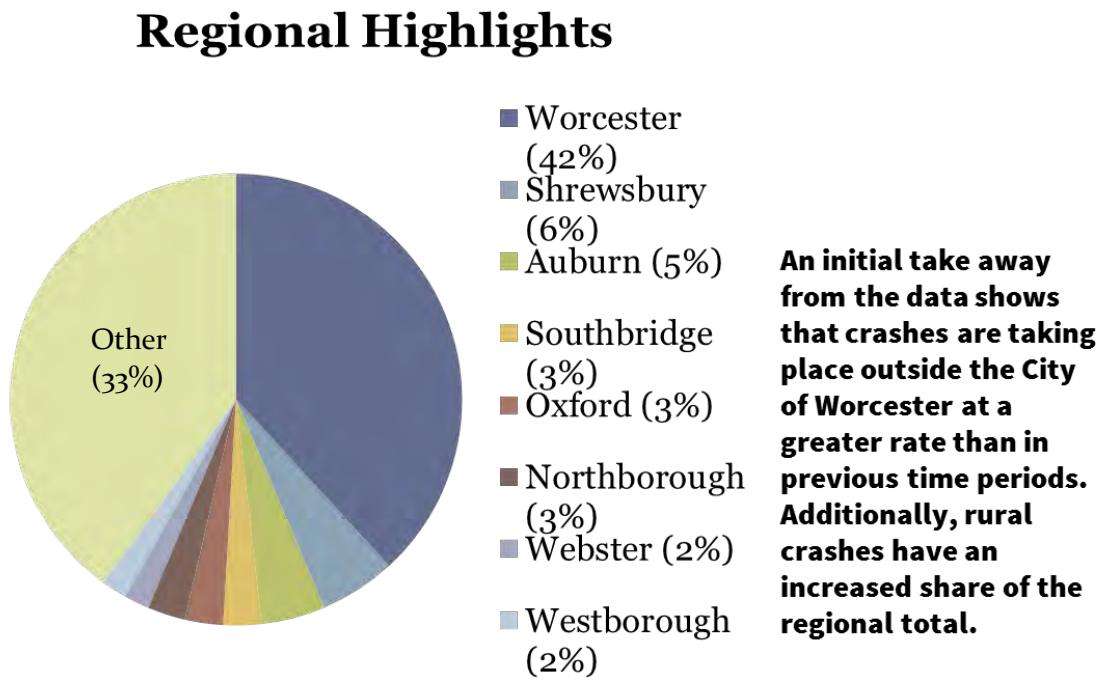
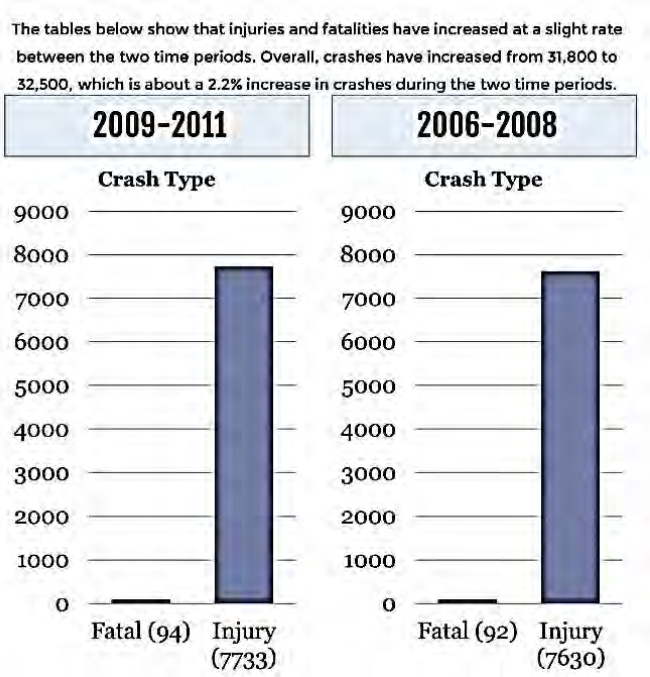

Regional Highlights
Other (33%)
Worcester (42%)
Shrewsbury (6%)
Auburn (5%)
Southbridge (3%)
Oxford (3%)
Northborough (3%)
Webster (2%)
Westborough (2%)
An initial take away from the data shows that crashes are taking place outside the City of Worcester at a greater rate than in previous time periods. Additionally, rural crashes have an increased share of the regional total.

Figure IV-19: Fatal vs. Injury Crashes



Needs Assessment

The Massachusetts Department of Transportation generates a listing of HSIP eligible Auto, Bike, and Pedestrian clusters for the Commonwealth. A list of HSIP eligible projects for the CMRPC planning region was derived from the statewide list. One hundred and seventy six (176) automobile, six (6) bicycle, and ten (10) pedestrian clusters have been identified as HSIP eligible for the region. (It should be noted that mainline Interstate crash clusters have been removed from consideration due to jurisdictional issues.) Communities that wish to pursue HSIP funding for a project to improve safety at any of these locations will need to perform a Road Safety Audit (RSA). Road Safety Audits have been held for all projects receiving HSIP funding in the CMRPC region. Through the RSA process, HSIP funding has been utilized to improve intersection design and safety across the CMRPC region. Current examples of HSIP funded projects can be found in the CMMPO Transportation Improvement Program (TIP). When data becomes available, future efforts will include returning to project locations for a follow-up RSA in order to measure the effectiveness of HSIP driven safety upgrades. Communities can contact CMRPC for further assistance regarding this requirement.

Prioritization

High Priority HSIP Eligible Automobile Crash Locations are as follows:

- CMRPC Region - Statewide Top 200 Automobile Clusters (28)
- CMRPC Region – HSIP Eligible Automobile Clusters Tier II (88)
- CMRPC Region – HSIP Eligible Automobile Clusters Tier III (60)

For the purposes of the Long Range Transportation Plan, crashes from the CMRPC region's share of the statewide Top 200 are considered highest priority. Please see the *2009-2011 CMRPC Regional Safety Report* for expanded discussion regarding Tiers II & III, as well as other non-HISP eligible crash clusters.

A Note on Road Safety Audits:

The Federal Highway Administration defines a Road Safety Audit (RSA) as the formal examination of an existing or future road or intersection by an independent, multidisciplinary team. The purpose of an RSA is to identify potential safety issues and possible opportunities for safety improvements considering all roadway users.

Pavement and State of Good Repair

Background

CMRPC staff collects pavement condition data on town maintained federal-aid eligible roadways on a three year cycle across the entire region. A team of two technicians perform a windshield survey gathering detailed information in nine categories of pavement distresses. The technicians also collect length and width of a segment and score the drainage infrastructure and the comfort of the ride. Staff entered the data collected in the field into *Cartegraph*, an asset management software package developed and supported by Cartegraph Systems Incorporated, used to inventory, quantifiably rate and analyze pavement distress information. Using *Cartegraph*, staff determined an Overall Condition Index (OCI) for each segment based upon the pavement ratings and nature of the distresses. The OCI is a score used to rate each segment inspected on a scale from 100 to 0. An OCI of 100 indicates optimal pavement conditions, while an OCI of 0 indicates that a road is in very poor condition and in need of extreme repair measures. The score is calculated by subtracting a series of deduct values associated with the severity and extent of the various pavement distresses described above. *Cartegraph's* deduct values are determined through a series of deduct curves, which were developed by pavement engineers using years of research on pavement performance. The resulting OCI is a quantified rating of pavement condition. The state Department of Transportation collects data on state-maintained roads. This data is incorporated into the CMRPC database to create a comprehensive map of all federal-aid eligible roadways condition in the region. The table below depicts the OCI range related to pavement conditions ratings and cost associated with the recommended action for the pavement in each of the categories.

Table IV-7 below shows that the OCI scores are separated into five categories ranging from "excellent" to "very poor." Each category is associated with a general maintenance or repair strategy recommended for pavement segments scored in that range. These recommended actions are used in budget scenarios to create maintenance and rehabilitation plans.

Table IV-7: Overall Condition Index and Recommendations

OCI Range	Pavement Condition	Recommended Action	Cost/ Sq. Yard
0 - 24	Very Poor	**Base Rehabilitation –** represents roads that exhibit weakened pavement foundation base layers. Complete reconstruction and full depth reclamation fall in this category	$50.00
25 - 47	Poor	**Structural Improvement –** when the pavement deteriorates beyond the need for surface maintenance applications, but the road base appears to be sound. These include structural overlays, shim and overlay, cold planeing and overlay, and hot in-place recycling.	$20.00
48 - 67	Fair	**Preventive Maintenance -** slightly greater response to more pronounced signs of age and wear. This includes crack sealing, full-depth patching, and minor leveling, as well as surface treatments such as chip seals, micro-surfacing, and thin overlays.	$8.00
68 - 87	Good	**Routine Maintenance -** used on roads in reasonably good condition to prevent deterioration from the normal effects of traffic and pavement age. This treatment category would include either crack sealing or local repair (pot hole, depression, poorly constructed utility patch, etc.), or minor localized leveling.	$0.75
88 - 100	Excellent	**Do Nothing -** used when a road is in relatively perfect condition and prescribes no maintenance.	$0.00

Performance Management

As discussed in Chapter II of this report, MAP-21 requires performance based planning on federal emphasis area, which includes asset management – pavement preservation. Mobility2040 recognizes the importance of pavement preservation and the Goal set by the CMMPO to address this area is ***"Maintain the condition of the regions roadways"***

The performance measures that have been set-up to measure this goal are:

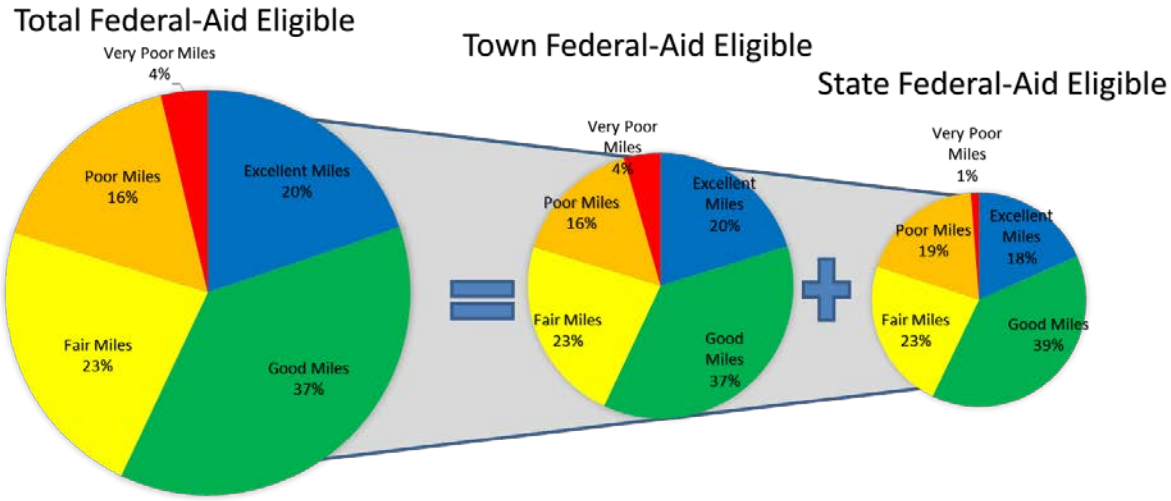
- Rehabilitate 25 miles of pavement that are in poor or failed pavement condition, including roadways that accommodate bicycle lanes.
- Improve sidewalks that are in poor or very poor condition by 10%

Analysis

Existing Condition

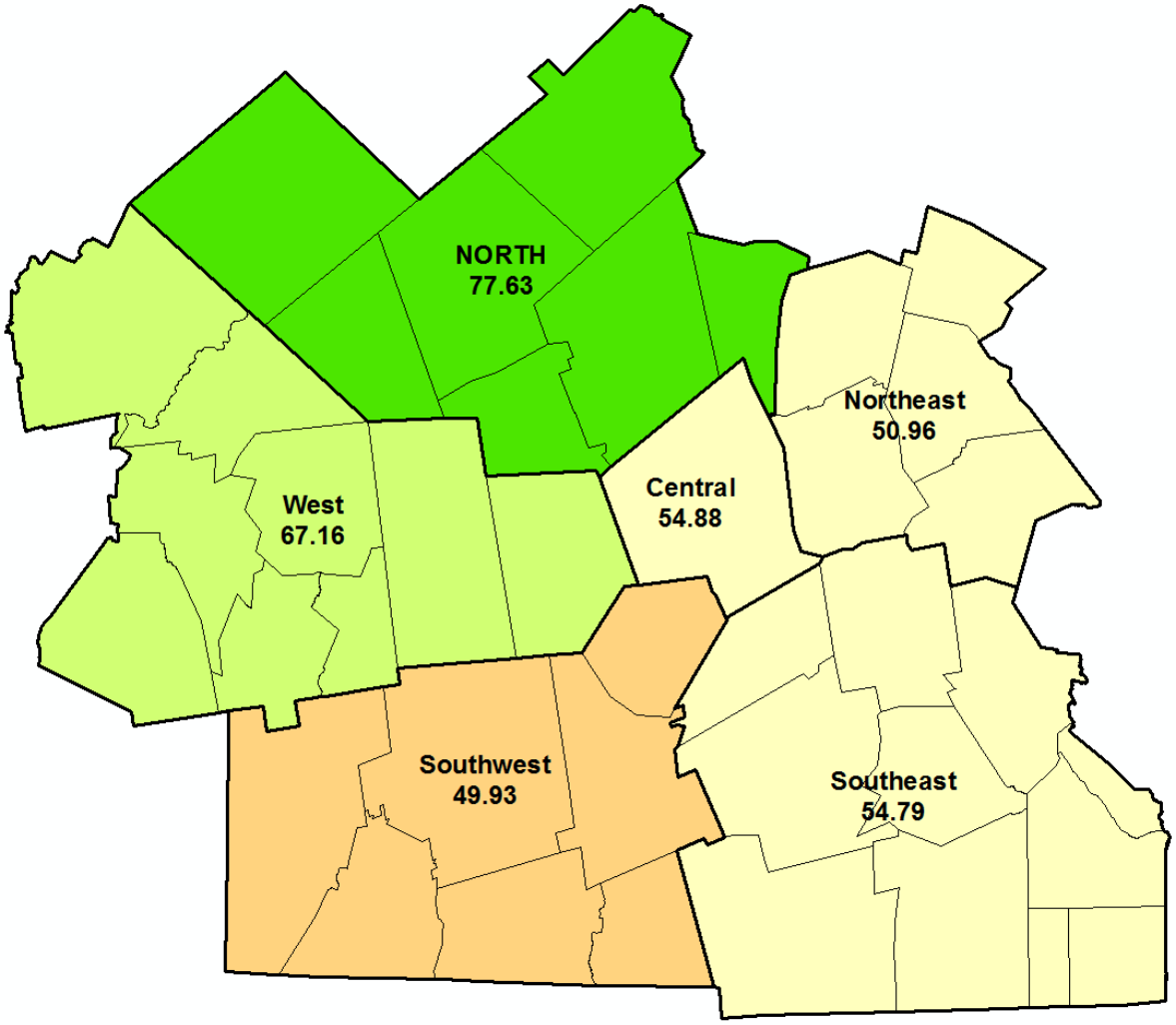
Region: Using the OCI scores calculated from the data collected, CMRPC staff determined that the regional network OCI is 60.06. About 212 miles of the region's 1,103 mile federal-aid eligible road network are in "excellent" condition, 400 miles are in "good" condition, 243 miles are in "fair" condition, 177 miles are in "poor" condition, and 40 miles are in "very poor" condition.

Figure IV-20: Federal Aid Eligible Roads by Condition



Subregion: As mentioned in the previous section, the network OCI for the entire region is approximately 60.06, placing the region's pavement in "fair" condition. The Central Massachusetts planning region is separated into 6 subregions. Figure IV-21 summarizes the OCI score for each of these subregions. The West and North subregions each have a network OCI that is greater than that of the entire region. The Northeast, Southwest, Southeast, Central, and West subregions each have network OCIs below that for the entire region. It is interesting to note that the North has the highest network OCI at 77.63, placing it in the "good" category. All of the other subregions are in the fair category.

Figure IV-21: OCI Score by Subregion



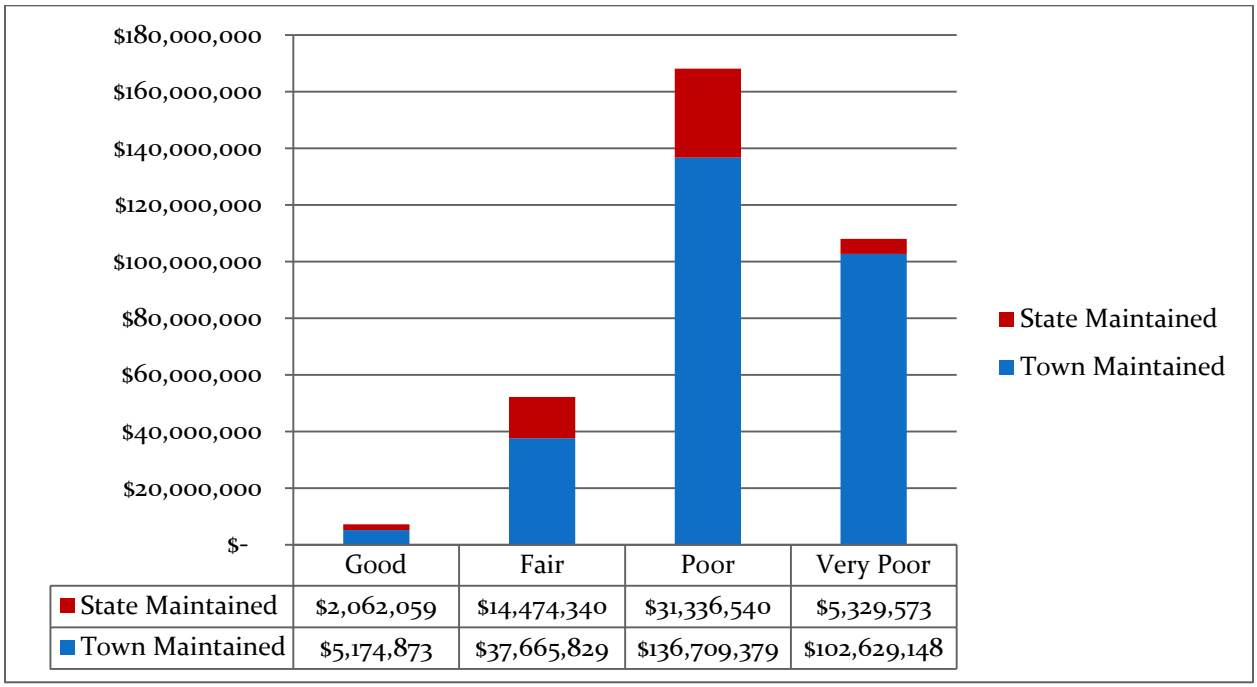
Cost of Repair

Once the condition of the network is established, determining the cost to repair and maintain the network is the next step. In the CMRPC pavement management program, the OCI ranges are associated with a recommended repair action and a repair cost. The table below shows the OCI ranges along with an activity description and the cost. The cost is per square yard and is applied against the area of a segment to determine an estimated repair cost.

Using these tools, staff estimates that it would cost $335.4 million today to bring all of the roads in the federal-aid eligible network to "excellent" condition. To maintain the current network condition going forward would require approximately $38 million per year, while improving the network to a "good" condition would require investing approximately $40-$45 million per year

Figure IV-22 below displays a break down by responsible jurisdiction of the maintenance costs from the previous page. The towns are responsible for 846 miles of roadway with a backlog of $200 million. The state DOT is responsible for 257 miles of roadway with a backlog of $66 million.

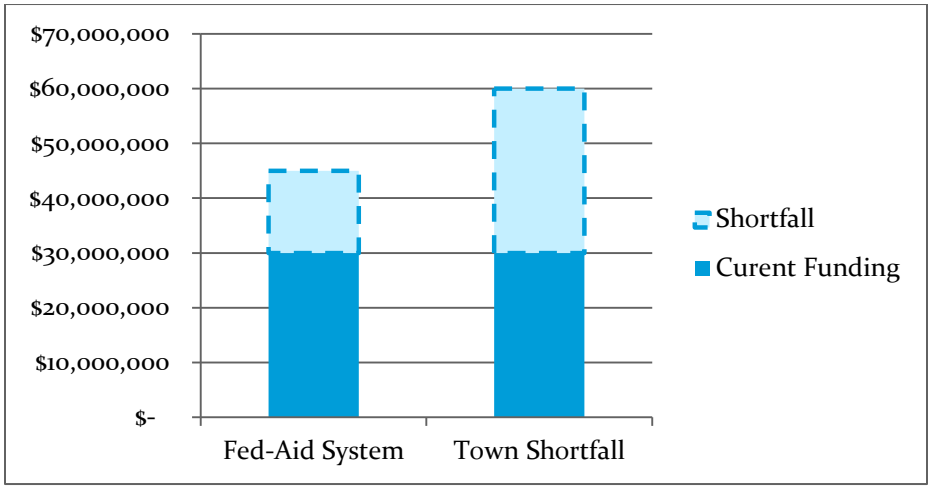
Figure IV-22: Regional Backlog by Condition



	Good	Fair	Poor	Very Poor
State Maintained	$2,062,059	$14,474,340	$31,336,540	$5,329,573
Town Maintained	$5,174,873	$37,665,829	$136,709,379	$102,629,148

In the Central Massachusetts planning region, the largest burden for road maintenance rests with the towns. Funding to maintain these roadways comes through the TIP, Chapter 90 funding, or from the towns themselves. CMRPC staff has identified an approximate $10 million annual funding shortfall to maintain the current federal-aid system, as these same resources are stretched to address congestion, safety, and other transportation issues. The towns have the added burden of local roads that are ineligible for federal aid funding. Even with Chapter 90 apportionment, Massachusetts Highway Association (MHA) identified an approximate $30 million annual funding shortfall for towns to maintain their roadways.

Figure IV-23: Funding Shortfalls

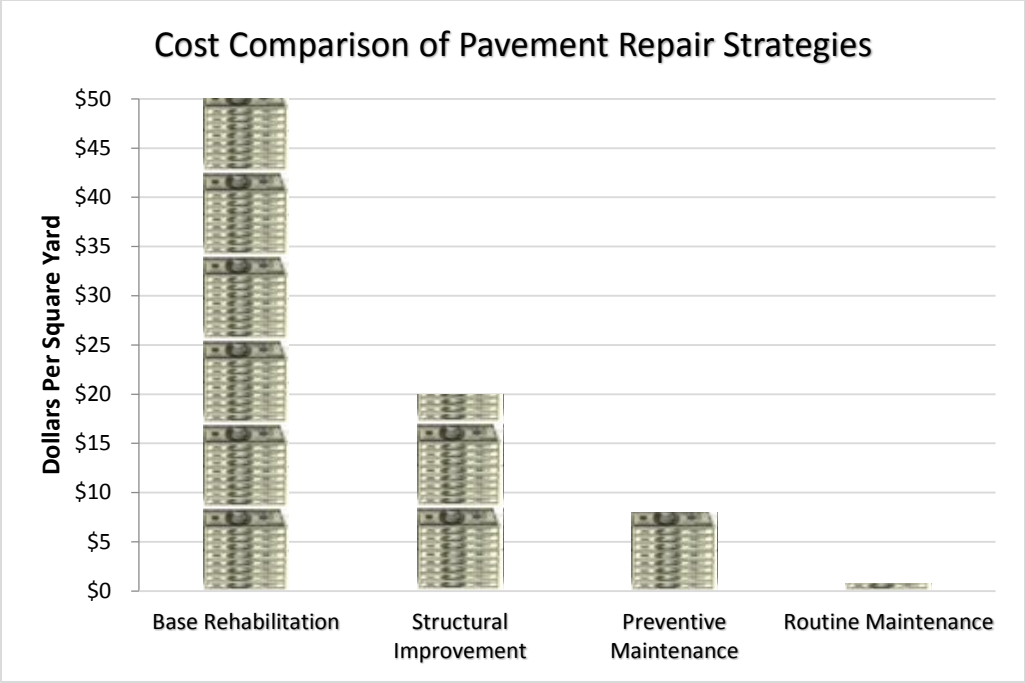


Prioritization

When we think of road repair we tend to think of a "worst first" approach. Our natural inclination is to prioritize the repair of the most beat up roads in our network. However, as Figure IV-24 so clearly displays, a "worst first" approach requires a large portion of available funding. It costs 66 times more money to reconstruct a roadway from the ground up than to perform routine maintenance on roadways. If our approach only prioritizes the repair of the worst roads, our limited funding will not stretch to address maintenance of roads in better conditions. The result will be increased overall cost to repair the entire network as road conditions continue to deteriorate and repair strategies become more intensive.

In order for the region's network OCI to be maintained additional funding must be allocated. Using CarteGraph it was determined that about $30 million dollars per year would be required to maintain an OCI in the "fair" category. To achieve this, 40%-50% of the region's Chapter 90 money would need to be spent on Federal-aid eligible roads. In addition to the needed Chapter 90 money approximately $5-$8 million dollars per year would need to be spent by the state to maintain the current network condition, not including money spent as part of the TIP. Of the money spent on State maintained roads 40%-45% would need to be spent on preventative and routine maintenance activities while the rest would be spent on structural improvement and base rehabilitation activities. Approximately $9 million dollars per year will need to be spent through the TIP. Since roads only requiring maintenance activities have a lower cost burden than those requiring structural improvement or base rehabilitation it is important to prioritize the roadways that will need this type of treatment. The CMRPC staff developed a priority list using the principles that have been highlighted so far in this report. For the current listing of priority, areas please see the reference materials

Figure IV-24: Cost Comparison of Pavement Repair Strategies



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Intelligent Transportation Systems (ITS)

Background

Technology has found its way into nearly every aspect of our lives, and so it should come as no surprise that it is now being used extensively in ways that improve everyday mobility. From traffic signals to toll collectors to transit fare payment systems, technology is spreading quickly in ways that increase the efficiency of the transportation system. Intelligent Transportation Systems, or ITS, is the use of electronics, communications, or information processing to improve the efficiency or safety of transportation systems.

Because ITS transportation solutions are real-time solutions, they are a natural fit for improving the management and operations of transportation systems. Management and operations encompass daily roadway actions, such as reconstruction and maintenance, snow plowing and salting, providing real time traveler information, and traffic signalization. It also encompasses special circumstances like preparing and responding to accident-related congestion, planned special events, and unplanned security concerns.

By focusing on the evolving technology of ITS and the day-to-day activities of management and operations, transportation planners have a greater opportunity of providing more efficient and effective solutions to the region's transportation problems. In addition, ITS applications used by the WRTA have proven beneficial to riders and have contributed to growth in mode shift to transit.

Performance Management

As discussed in Chapter II of this report, MAP-21 requires performance based planning related to federal emphasis areas, one of which is congestion. The CMMPO has drafted a number of goals for the Mobililty2040 Long Range Transportation Plan, two of the congestion-related goals and one freight movement goal are focused on ITS. The objectives for these goals are as follows:

Goal: Reduce congestion and improve mobility for all modes

Objective 1 - Coordinate Improved Incident Management (Highway & Transit).

- Facilitate group to improve incident detection & clearance time. Have 1 meeting per year.

Objective 2 - Enhanced Traveler Information (ITS).

- Facilitate the installation of information systems/kiosks at major intermodal locations, such as Union Station. 2 locations every 5 years.
- Expand I-290 ITS Real Time Traffic Management (RTTM). RTTM on I-395 and Route 146 also. Install 2 Variable Message Boards (VMB) every 5 years.

Goal: Improve Economic Vitality and Freight Movement

Objective 1 - Reduce delay along identified Freight Routes.

- Expand ITS Real Time Traffic Management (RTTM) to include identified freight routes. Install 2 VMBs every 5 years.
- Reduce average travel delays along roadway segments of major freight routes. 2 every 5 years.

Analysis

Federal law requires all intelligent transportation systems (ITS) projects funded through the Highway Trust Fund be compliant with a Regional ITS Architecture. Staff participated as part of the Central Massachusetts Regional ITS Planning and Coordination Committee (RIPCC) to implement the Statewide ITS Strategic Plan.

MassDOT has implemented Real Time Travel Message Signs (RTTMs) on the Turnpike through the Central Massachusetts region. These signs have been very helpful in detecting reoccurring and non-reoccurring congestion and help travelers to identify better routes to avoid congestion. MassDOT will be implementing cameras along I-290 from the Masspike to the I-495 which will be monitored at the Highway Operations Center in Boston to alert MassDOT staff and state police of any incidents or congestion issues. State police and local police departments will also be provided access to the live video feed. These cameras will be followed by RTTMs along I-290 in the future. Staff worked with MassDOT Boston and District 3 to facilitate plan the implementation of the cameras for I-290. Staff brought stakeholders together to assist in designing and locating the cameras along this corridor.

Using ITS for automobile parking applications will be reviewed over time as parking becomes more constrained in Worcester. At present, parking is not constrained in terms of availability or price, although downtown Worcester is experiencing tremendous economic growth and that may strain parking in the future.

Needs Assessment

In 2004, the Executive Office of Transportation-Office of Transportation Planning (now MassDOT) led the effort to develop a Central Massachusetts Regional ITS Architecture. This effort was updated in 2010. CMRPC coordinated by building local involvement and support for the effort. During the needs analysis step of the Regional Architecture development process, the Guidance Committee identified key regional needs and major themes for the Regional ITS Architecture. These findings helped shape the architecture to the unique circumstances of Central Massachusetts. The four regional needs, unchanged since 2004, were: congestion management; transit efficiency; efficient use of existing infrastructure; and economic development. The three major themes expressed by participants in 2004 were: transit demand and revenue; traffic congestion and traveler information. In 2010 the use of ITS data was added as a major theme. From these expressed regional needs and major themes came four statewide Near-Term Multi-Agency Initiatives that were recommended by the Guidance Committee for Central Massachusetts. They are:

- **Event Reporting System:** Internet-based tool that serves as a centralized repository for information on events affecting the transportation network.
- **Expansion of the Massachusetts Interagency Video Integration System (MIVIS):** Expansion of video sharing and distribution system to allow sharing of real-time video feeds among a larger group of agencies.
- **511 Travel Information System:** Public travel information system, covering the roadways and transit services in the region.
- **Planning Data Archive:** System for coordinating the planning data archives for the transportation agencies in the region.

These statewide initiatives are largely dependent on MassDOT implementation, and when eventually implemented, will require an expansive effort to involve regional agencies beyond MassDOT to become effective and have a significant effect on regional conditions.

Prioritization

As identified in the 2011 Worcester Regional Mobility Study, Transit Signal Priority (TSP) and Roadway Variable and Dynamic Message Signs (V/DMS) are valuable Intelligent Transportation Systems options for Central Massachusetts' urban core. Both TSP and V/DMS would help reduce vehicle emissions through more efficient bus system operations and added potential for drivers to avoid congested routes thus creating less gridlock for buses that have to travel these routes.

Complete the implementation of the cameras along I-290 and implementation of the RTTMS along this corridor will be the top priority for the Central Massachusetts region. The expansion of the Real Time Message Signs (RTTMs) along I-495 and Rte 146 will also be a priority for the region.

Other regional priorities include:

- Working with MassDOT District 3 to identify significant regional projects which affect the commuting traffic during construction to assist with the traffic management plans and identifying locations for placement of message boards regarding construction related delays and detours.
- Continuing to work with the WRTA and the Worcester DPW staff to identify critical intersections and bus routes for Transit Signal Priority implementation in the future.
- Expanding RTTM technology to include I-395, I-190 and other major state maintained arterials such as Rte 9 and 20 will benefit the region to improve mobility in the future.
- Ensuring that the recently implemented WRTA ITS system remains up to date over time.

Travel Demand Model

Background

The Regional Travel Demand Forecast Model is an important planning tool both for the evaluation of proposed regional transportation improvements and the projection of mobile source air emissions for significant regional projects. The model is the most effective and comprehensive way to project transportation needs within a twenty-year planning horizon as required by Federal regulation.

In the regional travel demand model, traffic volumes are forecast through the interaction of transportation demand and supply. Traffic zones are defined to encompass areas of development that represent the demand, while the actual road network represents the supply. A network is developed consisting of a series of points, or nodes, that graphically show locations of roadway intersections and other elements of the network. Connections between nodes are called links. Links represent highway segments and contain information such as speed and road capacity. Traffic zones contain demographic and employment information, and are represented by special nodes called centroids. Each zone is attached, or "loaded," onto the network by specialized links called centroid connectors.

Each traffic zone produces and attracts person trips based on its land use. Information entered into the model for each zone (such as population, households, income and employment) determines the amount of trips produced and attracted to that zone. Households are the primary producer of trips, while employment sites are the primary attractors. These productions and attractions are converted to vehicle trips that enter and leave each zone. The fact that people make trips for different purposes (work, shopping, school, personal business, recreation, etc.) – and have different vehicle occupancy rates in doing so – is also calculated into the model.

Performance Management

As discussed in Chapter II of this report, MAP-21 requires performance based planning on federal emphasis areas, which includes using the travel demand model to assess the condition of the roadway network. Mobility2040 recognizes the importance of the model to establish baseline data and measure progress to achieve the following goals and objectives:

Goal: Reduce Congestion and Improve Mobility for all Modes

Objective: Improve Corridor Management Integration

Performance Measure: Reduce average delays along identified congested major roadway segments; 2 delay areas every 5 years.

Goal: Reduce Greenhouse Gas and Promote Sustainable practices

Objective: Reduce GHGs generated by Auto and Transit in the region

Performance Measure: One percent VMT reduction in each 5 years period

Analysis

The regional travel demand model was used to generate the Daily Vehicle Miles Travelled and Total Daily Auto Person Trips for the current "2015" and Future "2040" years. Please see the table below for comparison.

Table IV-8: Comparison of travel behavior Current Vs. Future

	2010	2040	Percent Growth
Daily Vehicle Miles Travelled	19,171,695	21,292,110	11%
Total Daily Auto Trips	2,136,828	2,258,052	6%

The table above shows that there will be an increase of about 6% of daily auto trips, and vehicle miles travelled increases by 11%. Given the increase in both the daily person trips and the VMT, it is obvious that the congestion on the roadway network will only get worse in the year 2040. Please see Figure IV-25 which shows the comparison of congested locations for current and future conditions. As mentioned above all the major roadways such as the interstates and state numbered routes in the urban area of the region will be congested by the year 2040.

Needs Assessment

Given the limited funding to expand the transportation system, there is a need to look at innovative ways to reduce congestion by looking more deeply at transportation demand management techniques. Transit, walking and bicycling are modes that can improve livability and public health. Some of the initiatives that could help alleviate congestion are investing in increasing and promoting transit use and investing in programs that reduce single occupancy vehicle use such as MassRIDES, Park and Ride lots, expansion of sidewalks and bike lanes. Intelligent Transportation Systems can also be used for both recurring and non-recurring congestion like construction and accident delays.

Prioritization and Next Steps

Staff will continue efforts to keep the model current with network and landuse data. The model will be use to assist with the following tasks:

- Develop model capabilities to measure key Performance Measure metrics developed as part to this Plan.
- Generate model outputs to assist with TIP project scoring.
- Analyze the benefits of ramp metering on I-290 ramps. Use the Transmodeler micro-simulation to aid in the effort.
- Model the WRTA's comprehensive service analysis recommendations to help prioritize the implementation of the recommendation.
- Improve the model's capability to more accurately reflect freight (truck) travel.
- Develop enhanced transit reports and highway related measures to understand the impacts of projects on environmental justice areas.
- Aid in the traffic management plan development during the construction of major regional projects.

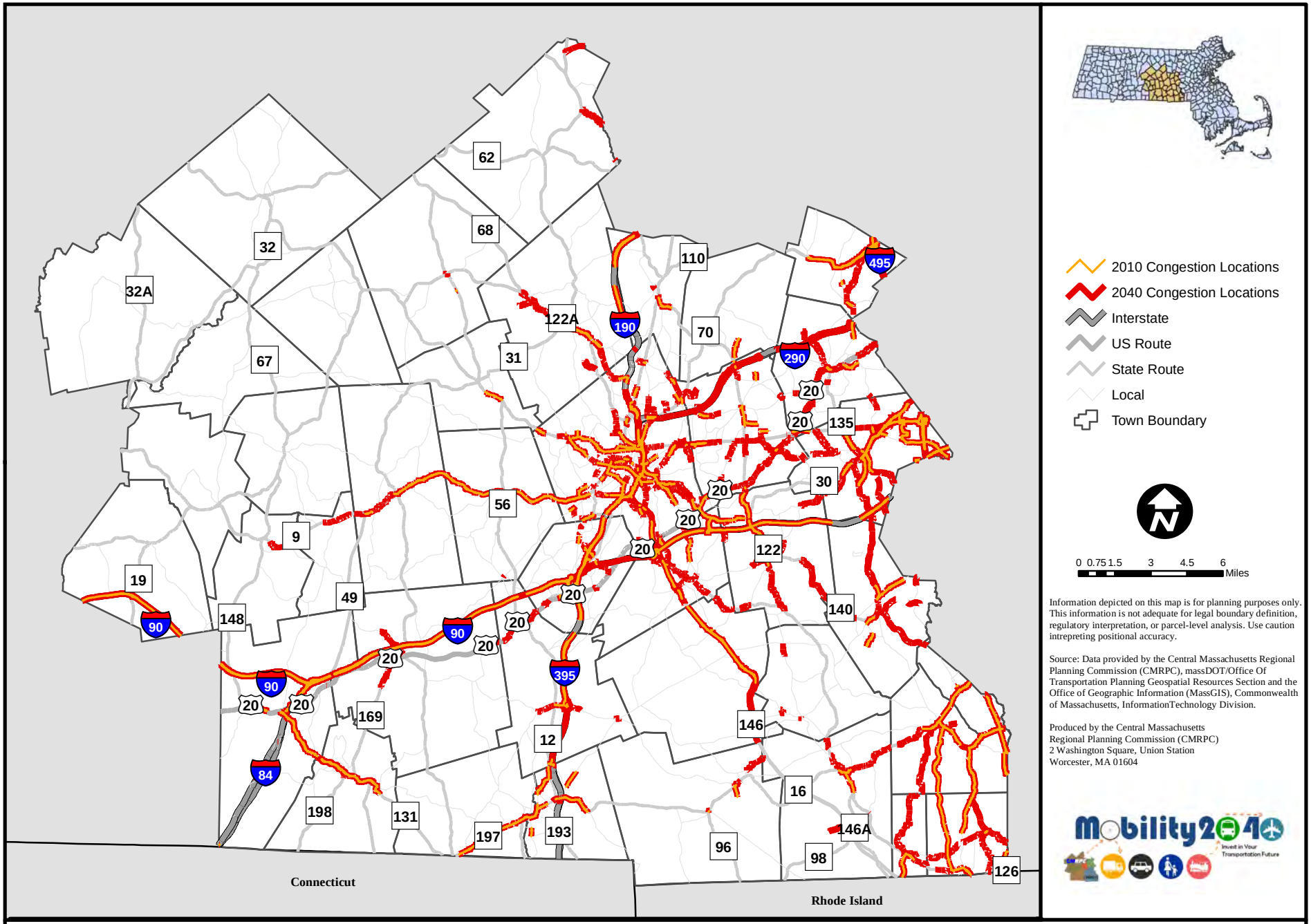


Figure IV-25 Current (2010)and Future No-Build (2040) Congestion Locations

Freight (Rail and Trucking)

Background

Freight movement in the planning region is anticipated to both increase and evolve. Existing intermodal activity will continue between highway and railroad freight. Freight movement has a direct relationship to regional economic vitality. Through connections to the national freight network, the ability of rural communities to access national and international trade markets is strengthened which, in turn, supports regional economic development.

National Efforts

US DOT plans to issue guidance for freight investment, initially targeting the nation's highway system. Another future effort will focus on the nation's extensive network of freight railroads. US DOT is soon to finalize and, pending Congressional approval, potentially expand the initial National Freight Network of roadways required under MAP-21. At this time, the draft network appears somewhat limited and disjointed in the greater New England area. Performance measures for the movement of freight on a national basis are also under development at US DOT, with early release materials discussed below. Freight system reliability is also an important US DOT focus area. Multi-modal stakeholder advisory committees are suggested where necessary to help guide investment in infrastructure that is critical to the movement of freight. Within the planning region, this role is served by the CMMPO Advisory Committee.

FHWA Freight Performance Measures (FPM) Initiative

The FHWA Office of Freight Management & Operations, through a research partnership with the American Transportation Research Institute (ATRI), has developed performance measures for the nation's highway system through the Freight Performance Measures (FPM) Initiative. System performance measurement is at the forefront of the national transportation discussion as various agencies at all levels seek to monitor existing infrastructure, identify investment needs and quantify costs and benefits of improvement.

One element of the FPM initiative is a data processing tool that determines average operating speeds for trucks that travel on the Interstate Highway System. These averages are calculated using onboard data from several hundred thousand trucks. By accessing this system, transportation data analysts, researchers and other practitioners can determine where, when and how efficiently trucks are moving on selected Interstate highways.

US Environmental Protection Agency SmartWay Program

The US Environmental Protection Agency's (EPA) SmartWay Program encompasses a range of efforts aimed at boosting fuel efficiency in business enterprise while reducing emissions that degrade air quality. One sector targeted by SmartWay is the nation's trucking industry. The EPA website, in addition to providing program highlights, displays many links to a range of SmartWay resources including finance programs, shipper and carrier/logistics-oriented materials and strategies, sample partner profiles and case studies, and SmartWay outreach materials that can be used to inform the business public about potential savings and environmentally-sound practices that may be adopted.

Regional Challenges

Typically, the CMMPO does not directly influence the movement of freight within and through the greater region. The planning staff periodically informs the CMMPO of the range of challenges facing the providers of freight transportation, both highway and railroad. Reducing congestion and increasing safety on the nation's primary freight routes is a known emphasis area of US DOT. Regional planning efforts seek to minimize trucking delays as well as decrease crash incidents resulting in both fatalities and injuries. The planning staff has also conducted a multimodal community freight-hosting pilot study effort with rail freight provider Providence & Worcester Railroad and the host communities of Auburn and Oxford. This study considered the needs of trucking movements on local and regional highways between rail served sites and the Interstate System. Further, working with the Regional Chamber of Commerce, staff developed a Freight-Based Economic Development Site Selection Inventory that could be served by trucking originating at the CSX Intermodal Yard on Franklin Street in Worcester. On a statewide basis, the activities of the Mass Motor Truck Association (MMTA) are followed by the staff through the group's periodic newsletter.

Performance Management

Freight is an important component of the region's economic development. As such, it was included in Mobility2040 goal to Improve Economic Vitality and Freight Movement. The measures for this goal are the following:

Objective 1 - Reduce delay along identified Freight Routes.

- Expand ITS Real Time Traffic Management (RTTM) to include identified freight routes. Install 2 VMBs every 5 years.

- Reduce average travel delays along roadway segments of major freight routes. 2 every 5 years.

Objective 3 - Improve Safety along Freight Routes.

- Reduce injuries and fatalities along freight routes. 10% every 10 years.

Analysis

Current Conditions

The Region's Primary NHS Freight Routes

The region's primary National Highway System (NHS) freight routes serve major intermodal facilities and are a focus of ongoing freight planning efforts in the region. These priority freight routes, in many cases, provide a connection between major Interstate highways and major intermodal terminals, particularly in the region's core. The primary routes were previously established through ongoing freight planning efforts and documented in earlier LRTPs and Management System Progress Reports. Tables IV-9 and IV-10 (located on pages IV-88 and IV-89) provide a summary of facts, observations and deficiencies on the Primary NHS freight routes within the planning region:

Primary NHS Freight Routes: Facts and Observations

Table IV-9 includes facts and observations for the primary NHS freight routes for five major intermodal terminals in the planning region. Four of the locations are in the City of Worcester while the other is in the town of Westborough. All are truck-railroad freight facilities with the exception of the Worcester Regional Airport. Most of these NHS freight routes are functionally classified as a minor or principal arterial. Traffic volumes range from as low as 3,700 daily vehicles near the Worcester Intransit Container Incorporated (ICI) facility to as much as 18,000 daily vehicles in vicinity of the Worcester Regional Airport. The only at-grade railroad crossings are in the ICI facility. The majority of adjacent land uses near these major intermodal facilities are business, industrial, or manufacturing, with some residential.

In regards to pavement, it is in "good" or "excellent" condition for the four locations in Worcester. The Westborough CSX Yard is the worst, with an average Overall Condition Index (OCI) of 59, which is considered to be in "fair" condition. For safety data, documented "crash clusters" along the primary freight routes were analyzed. The data shown in the table indicate the severity of crashes in the identified clusters over a three-year sample period. The route serving the ICI terminal in Worcester did not have any crash clusters, therefore no crashes are listed. The Westborough CSX intermodal facility had only 13 crashes. However, the routes

serving the three remaining Worcester facilities each had about 100 crashes over the three year analysis period.

There is at least one bridge along the established freight routes for all five terminals. Most of the bridges had a minimum rating of 70.0 with the exception of the structure near the Worcester CSX terminal and one of the bridges along the primary freight route to the Regional Airport. There are two P&W Railroad-owned structures over Southbridge Street in Worcester. Bridge 69.74A is a potential candidate for future year rehabilitation. At this location, bridge column piers on the curb of Southbridge Street would be modified to increase lateral clearance for the roadway. Further, the railroad has indicated that Bridge 42.48/Track 1, constructed in 1892 and 1911, needs to be replaced at a cost of approximately $1.75M. When replaced the structure would be lengthened, thus eliminating the travel lane reduction beneath the bridge that currently exists on Southbridge Street. Lastly, there are no guide signs for three of the facilities and minimal signs for the Westborough CSX yard, although there are numerous guide signs for the Worcester Regional Airport.

Primary NHS Freight Routes: Observed Deficiencies

Included in Table IV-10 are the observed deficiencies along the primary NHS freight routes for the five major terminals in the planning region. In regards to geometric/physical features, tight turning radii is a problem at some intersections along most of the established freight routes. There is also measureable pavement distress along some roadways as well as a narrow bridge underpass on Southbridge Street near Lafayette Street, adjacent to the P&W's freight terminal. The final two columns in the table address the safety/delay deficiencies on either a connector roadway or at a connector/NHS junction. As for the connector roadways, all experience some level of congestion in the AM/PM periods and trucks have difficulty making turns during these peak periods. Also, there are two intersections along these roadways that lack defined turning lanes. In regards to the connector/NHS junctions, lengthy delays and heavy congestion have been observed in the field. The Route 9 interchange with Computer & Research Drives is utilized by trucking serving the Westborough CSX yard. For the Worcester CSX yard, peak period congestion occurs at the Washington Square roundabout. Further, there is a recurring congestion issue observed along the "J" ramp at MassPike (I-90) interchange #10A in Millbury that needs to be monitored.

TABLE IV-9

Primary NHS Freight Routes: Facts and Observations

Community (Area type)	Terminal name	Facility Type	Facility ID	NHS Freight Route Description & mileage	Functional Class	# Lanes	Typical Daily Vol	At Grade RR Crossings	Adjacent Land Use	CMP Segment	PMS OCI	Safety: Cluster Crashes in 3-yr sample period	Bridges	BMS Ratings	Guide Signs
Westborough (Small Urban)	Westborough CSX Yard	Truck/Rail Facility	MA61R	R1: Yard to Flanders Rd to Computer Dr to Route 9 ramps (2.25 mi); R2: MA61R1 to Research Dr to Route 9 ramps (.15 mi)	Minor Arterial; Minor Collectr; Local	Varies; Two to Four	7400 VPD '10 HV: 10.1%	None	Industrial, manufacturing and warehousing; Other	N/A	59; 87; 31 Avg= 59.0	Property damage = 10 Personal injury = 3 Fatalities = 0	W-24-026 (Lyons St over Rt 9) (ON)	70.0	Minimal
Worcester (Urbanized)	Worcester CSX Yard - Franklin St (Grafton St Entrance)	Truck/Rail Facility	MA70R	Yard to Grafton St to Summer St to I-290 WB (.50 mi)	Minor Arterial	Two	9100 VPD '14 HV: 6.9%	None	High density business; Industrial, manufacturing and warehousing	#27	75	Property damage = 80 Personal injury = 16 Fatalities = 0	W-44-082 (I-290 EB) (Over); W-44-082 (I-290 WB) (Over)	55.0	None
Worcester (Urbanized)	Worcester P&W Yard - Southbridge St	Truck/Rail Facility	MA67R	R1: Yard to Southbridge St to cambridge St (.45 mi) R2: Yard to Southbridge St to Quinsigamond Ave (.3 mi)	Minor Arterial	Two to Four	14100 VPD '12 HV: 9.3%	None	High density business; High density residential	#24 & #45	95	Property damage = 81 Personal injury = 29 Fatalities = 0	P&W bridge #69.74A Constructed 1926, 504176E (Over); P&W bridge #42.48/Track 1 Constructed 1892 & 1911 861586K (Over)	---	None
Worcester (Urbanized)	Worcester ICI Yard - Wiser Ave (Blackstone River Rd Entrance)	Truck/Rail Facility	MA68R	R1: Yard to Blackstone River Rd NB to Route 146 (.8 mi) R2: Yard to Blackstone River Rd SB to Route 146 (.25 mi)	Minor Arterial	Two	3700 VPD '12 HV: 7.3%	905790K; 871895A; 871893L; Add'l on Millbury St near Saint Anthony St	Low density commercial; Industrial, manufacturing and warehousing; Low density residential	#37	97; 73 Avg= 85.0	Property damage = 0 Personal injury = 0 Fatalities = 0	W-44-157 (Blackstone River Rd) (ON); W-44-161 (McKeon Rd) (ON)	96.6; 94.0	None
Worcester (Urbanized)	Worcester Regional Airport	Airport	MA65A	Airport Drive to Bailey St to Pleasant St to Highland St to Rt 9/12/122A (4 mi)	Principal Arterial; Minor Arterial	Varies; Two to Four	18000 VPD '12 HV: 11.8%	None	High density commercial; High density residential	#28 & #41	92; 80; 95; 69; 71; 65; 87; 99; 48 Avg= 78.4	Property damage = 86 Personal injury = 24 Fatalities = 0	W-44-094 (Belmont St) (ON); W-44-078 (Belmont St) (ON); W-44-073 Pleasant St) (ON)	19.0; 70.6; 74.4	Numerous

TABLE IV-10
Primary NHS Freight Routes: Observed Deficiencies

Community	Terminal name	Geometric/Physical Feature Deficiencies (relative extent of area)	Safety/Delay Deficiencies on Connector Roadway (AM/PM or Terminal peaks)	Safety/Delay Deficiencies at Connector/NHS Junction (AM/PM or Terminal peaks)
Westborough	Westborough CSX Yard	Tight turning radii at intersections (some) Road deterioration on Walkup Dr (most)	Heavy traffic/congested (AM/PM) Long delays at traffic signals (AM/PM) Pedestrian crossing markings faded (AM/PM)	Highly utilized interchange w/ Rte 9: Heavy traffic/congested (AM/PM) Long delays at traffic signals (AM/PM) Pedestrian crossing markings faded (AM/PM)
Worcester	Worcester CSX Yard - Franklin St (Grafton St Entrance)	Tight turning radii at intersections (some) Pavement distress (some)	Heavy traffic/congested (AM/PM) Difficulty making turns (AM/PM)	Heavy traffic/congested (AM/PM): Peak period congestion observed at Washington Sq. roundabout
Worcester	Worcester P&W Yard - Southbridge St	Tight turning radii at intersections (some) Narrow bridge underpass near Lafayette St (one) Drainage/Flooding (most)	Roadway width varies (AM/PM) Heavy traffic/congested (AM/PM) Difficulty making turns (AM/PM) Lack of turning lanes at intersections (AM/PM)	Heavy traffic on mainline NHS (AM/PM) Tight turning radii at intersections (AM/PM) Lack of turning lanes (AM/PM)
Worcester	Worcester ICI Yard - Wiser Ave (Blackstone River Rd Entrance)	Surrounding roadway system reconstructed in last decade as part of Rte 146 major infrastructure improvement project	Regional and local traffic flows now separated - congestion in area (AM/PM) reduced	Reconstructed roadways and interchanges need to be monitored for peak period congestion and/or safety deficiencies (current issue noted on "J" ramp at MassPike Interchange 10A in Millbury)
Worcester	Worcester Regional Airport	Tight turning radii at intersections (some) Pavement distress (some)	Heavy traffic/congested (AM/PM) Difficulty making turns (AM/PM) Lack of turning lanes at intersections (AM/PM)	Northern corridor east-west arterial mobility improvements at key locations to address congestion and safety

Inefficiencies to Movement of Freight

Inefficiencies to the movement of freight along the region's highway network have been observed and documented within the planning region, as summarized below.

Low Bridge Structures

Older bridge infrastructure, some in excess of 100 years in age, lacks necessary vertical clearance for modern vehicles and associated equipment. There are a number of low bridges in town of Westborough and city of Worcester, and on other lesser traveled roadways in the planning region. When large trucks get inadvertently stuck beneath low bridges, quite often vehicle damage results, and there are traffic delays associated with clearance operations of the stuck and often disabled vehicles as well as impacts to surrounding businesses. Over-size vehicle detection equipment has been considered and installed at specific low bridge locations that have a history of clearance issues. Methods include enhanced warning signage, hanging barriers, and lasers which detect excess height vehicles.

Substandard Roadway Geometry

Tight turning radii exists at older highway interchanges and intersections, and there are sharp curves where rollovers have a tendency to occur and other substandard roadway geometry. Modern chevron-style warning signs can be installed on identified high hazard roadway curves where rollovers have been documented. These signs can also be supplemented by selective vegetation removal. Further, High Friction Surface Treatments (HFST) should also be considered for sharp roadway curves with a significant crash history.

Freight Policy

Policy-related issues are formidable. These include local restrictions on delivery times, neighborhood commercial vehicle exclusions, and a lack of adequate commercial loading zones, truck parking and turning facilities, particularly in the more urbanized areas. Ongoing planning efforts attempt to balance neighborhood preferences with the need to move goods.

Truck parking issues exist on a wide basis in greater New England. Truck-oriented facilities are somewhat limited in comparison to other areas of the country. Truckers, who travel long distances, need places to park, rest, eat and bathe. As demand for goods is anticipated to remain high, the needs of the trucking community must to be addressed to ensure the continued safe flow of freight on the highway network.

Despite a range of challenges, MassDOT efforts to install select Intelligent Transportation System (ITS) components statewide [including an All Electronic Tolling System (AETS) on the MassPike (I-90)] are anticipated to decrease the known inefficiencies of the highway network in the greater region. This will help to reduce delays in the movement of freight. Further, consolidated truck permitting for all of the New England states is being considered on the federal

level so as to streamline highway freight movement in the geographically compact six-state region.

Freight Railroad Providers Operating in the Planning Region

This section of Mobility 2040 provides an overview of the freight rail transportation providers operating in the greater region. Six railroads are active in the planning region. General information concerning each is summarized. One, the North Brookfield, is currently being resurrected from dormancy.

- CSX
- East Brookfield & Spencer Railroad
- Grafton & Upton Railroad
- MassCentral Railroad
- North Brookfield Railroad
- Pan Am Railways
- Providence & Worcester Railroad

Central Massachusetts is a significant freight intermodal hub for the state of Massachusetts and the greater New England region. A map of railroads and major intermodal facilities in the region is shown in Figure IV-26.

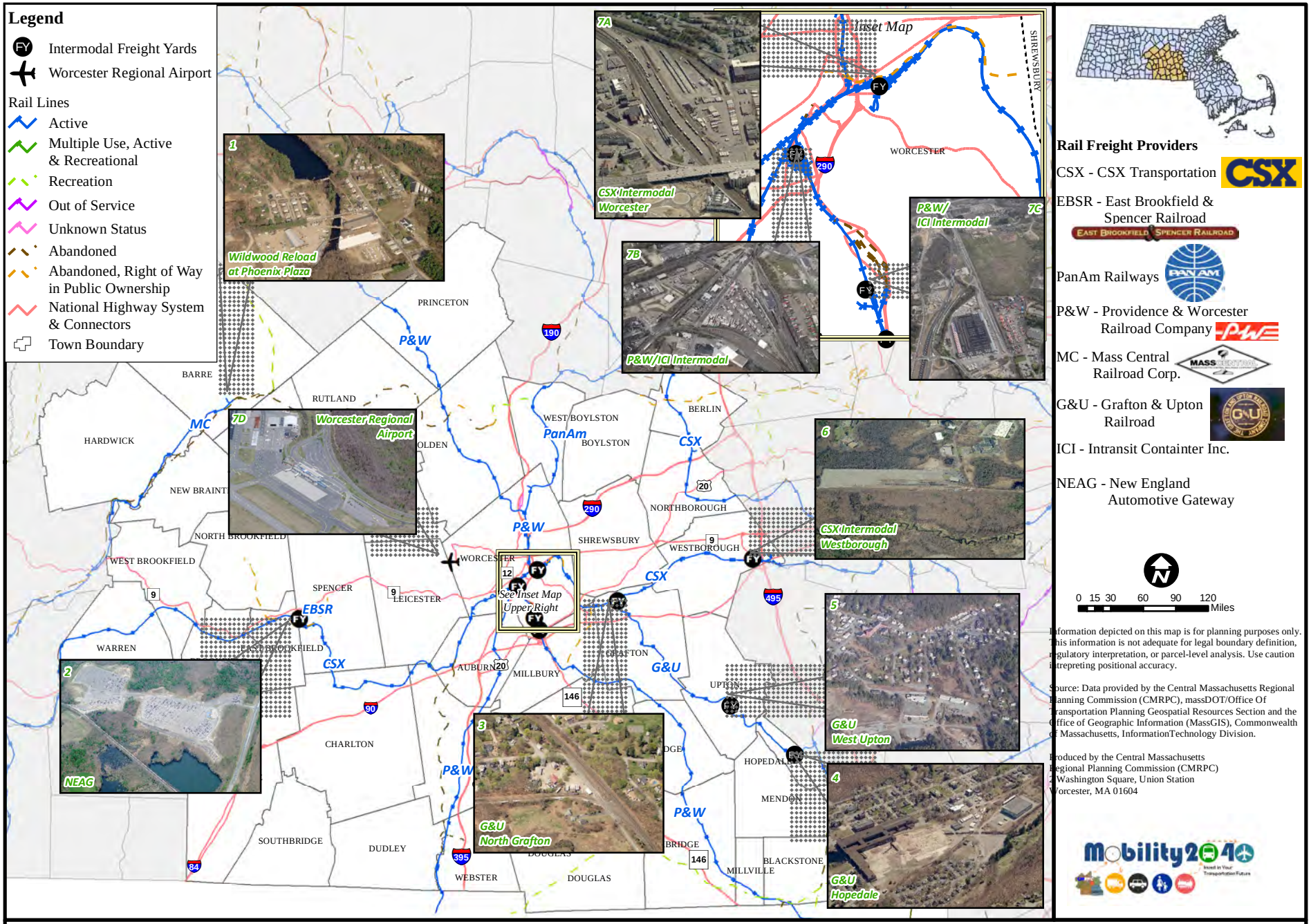


Figure IV-26 Highway and Railroad Freight Network with Major Intermodal Facilities

Needs Assessment

Various improvements to the multimodal transportation infrastructure in the greater region that would enhance the freight movement across the system have been identified. These improvements range from the restoration of existing infrastructure, to new construction, to the deployment of various technologies. For the purposes of this summary, the "freight system" is viewed to consist of the region's network of major highways and railroads. In addition, planning efforts also focus on the region's previously identified, primary National Highway System (NHS) freight routes serving major intermodal facilities, particularly in the region's core. Further, some focus is also placed on the major federal-aid roadways serving the region's rural areas that are also important to the movement of freight.

Highway

Interstate Maintenance (IM) Program

The FHWA first became involved with funding for maintenance activities on the Interstate System as a result of the Federal-Aid Highway Act of 1976 that established the 3R program to fund Interstate resurfacing, restoration and rehabilitation. The Federal-Aid Highway Act of 1981 expanded the program by adding a fourth "R", reconstruction.

The 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) terminated the I-4R program, except for a small discretionary set aside, and established a new IM program and a separate NHS program which includes the Interstate System. The IM funds may be used on the Interstate System for 3R work and for reconstruction of bridges, interchanges and overcrossings along existing Interstate routes, but may not be used for the construction of new travel lanes other than high occupancy vehicle lanes or auxiliary lanes. The 1998 Transportation Equity Act for the 21st Century (TEA-21) expanded eligibility for funding under the IM program to the 4th R, reconstruction. As a result, the addition of new interchanges, new rest areas, new noise walls, etc. became eligible for IM funding. However, IM funding of added lanes, except HOV and auxiliary lanes, are not allowed.

In the greater region, likely future Interstate highway interchange reconstruction is anticipated at I-495/Route 9 in Westborough and, the MAPC planning region, I-495/MassPike (I-90) in Hopkinton and I-495/I-290 in Marlborough. In Worcester, future envisioned projects include the reconstruction of the I-290/Vernon Street interchange and the potential expansion of the I-290/Route 12 (Hope Avenue) interchange to accommodate all movements. At this time, traffic cannot exit I-290 eastbound nor enter I-290 westbound. Further, at this time, the reconstruction of the Route 9 (Belmont Street) bridge over I-290 is currently underway. A host of construction

period mitigation measures are included as part of this major project which will result in a widened Route 9 bridge over I-290.

Deployment of Intelligent Transportation System (ITS) Technologies

MassDOT is now in the process of finalizing the design for the installation of real-time guide signs on I-290 and other roadways to inform the travelling public of travel times in the greater region. In particular, MassDOT's now underway I-290 Intelligent Transportation System (ITS) Implementation Project includes 16 Closed Circuit Television (CCTV) cameras and 4 overhead Changeable Message Signs (CMSs) from the MassPike (I-90) to I-495. Another aspect of the I-290 project includes the installation of Real Time Travel Monitoring (RTTM) devices. (The RTTM signs will be different from those on the MassPike; they will be in the form of a green Guide sign.) Eventually, similar technologies are anticipated for deployment along I-395 and other major roadways.

All Electronic Toll System (AETS) on the MassPike (I-90)

MassDOT is currently in the process of converting and replacing the MassPike (I-90) cash and electronic EZ Pass toll collection systems with a new system of tolling relying only on All Electronic Tolling (AET). The project will include both roadway tolling infrastructure and toll collection system technology. With the planned removal of existing toll booths, vehicle delay may be reduced at a number of MassPike interchanges, including those in the planning region.

Regional Management Systems: Congestion, Pavement & Safety

The Management Systems maintained by the CMRPC transportation planning staff monitor both the usage and condition of the region's federal-aid network of major roadways. The congestion, pavement and safety management systems have been ongoing and continually evolving for the past two decades. Observations are made in the field, data is collected, a range of analysis is conducted and annual progress reports are compiled. Based on the findings, a range of improvement projects are proposed for future year consideration for implementation.

Congestion: roadway segment travel time and delay monitoring, critical intersection Level-of-Service operations assessment, and identification of high delay locations. Program now includes FHWA-required Local Bottleneck Reduction Program (LBRP).

Pavement: windshield roadway distress surveys, subsequent analysis, determination of Overall Condition Index (OCI) and compilation of maintenance plans.

Safety: crash data compilation, GIS analysis identifying top crash locations as well as "crash clusters". Staff now regularly participates in MassDOT sponsored "Roadway Safety Audits (RSA).

At this time, the Management Systems are evolving to meet the US DOT requirement for the transition to performance-based planning. Those projects that have the greatest return on the investment of transportation improvement funding will be identified and moved towards implementation by the CMMPO.

"Complete Streets": Designing for All Modes

A "Complete Street" is one that provides safe and accessible options for all travel modes - pedestrian, bicycle, public transit, autos and trucks - and for all ages and abilities. While many existing roadways are designed to optimize auto travel, Complete Street efforts have sought to increase the role of non-motorized and transit options by providing continuous sidewalks, bicycle lanes, or wide roadway shoulders. Instead of simply focusing on main streets or downtown corridors, a Complete Street policy creates a safe, accessible environment throughout a transportation network.

Increasing the role of the pedestrian and bicyclist in roadway design and operation standards, Complete Street policies are meant to ensure that safe travel options exist for all users. MassDOT's *Project Development & Design Guide* embraces this approach to roadway design, and serves as a useful guide on how to implement the Complete Streets design approach. As such, designers, planners, public officials and advocates have a responsibility to promote and improve public health, reduce traffic congestion, make places safer and more livable, while reducing environmental impacts.

Designing a Complete Street can be challenging without first identifying all the factors that may influence the design. Other than funding some of these factors include: number and type of users, available right-of-way, safety amenities, community needs and desires, parking needs, utilities, public transit, and sensitive land uses. Accordingly, the needs of trucking serving local businesses in the greater region need to be accounted for early in the planning process.

CMMPO Transportation Improvement Program

One implementation option for highway-related improvement projects is the annual Transportation Improvement Program (TIP) administered by the Central Massachusetts Metropolitan Planning Organization (CMMPO). The CMMPO is the transportation policy and project selection for the planning region. Each year, eligible projects are selected for programming using the federal-aid funding targets provided by MassDOT. The TIP must be

financially constrained for each of the listing's four fiscal years. The TIP includes roadway, bridge, intermodal and bicycle & pedestrian projects. At this time, the TIP continues to evolve, transitioning to *performance-based* planning in an attempt to maximize the return on investments made in the region's multi-modal transportation network.

Railroad

Overview

In general, opportunities for expansion of the rail system in the greater region were considered broadly in both a micro and macro scale. Focusing on the major intermodal facilities located throughout the region, some identified opportunities are Worcester centric while others have the potential to directly pertain to the host communities of intermodal transload facilities.

Industrial Rail Access Program

Most improvements to the infrastructure of the railroads are privately funded. However, MassDOT's Industrial Rail Access Program, known as "IRAP", provides infrastructure improvement funding for modest-sized rail access projects. Recent recipients in the region included the Grafton & Upton Railroad and the Providence & Worcester Railroad. Funding awarded within the planning region included the following useful projects that were implemented using a combination of public and private funding:

- G&U Railroad: improvements to the Hopedale yard, constructing a switching lead and several sidings, $221K state ($552K total)
- P&W Railroad: "Cargill Bridge" replacement, $313K state ($522K total)

In December 2014, the P&W submitted another application for IRAP funding for the proposed rehabilitation of an approximately four hundred linear foot (400') "wye" track (and three (3) switches) connecting P&W's Norwich Branch and Main Line track in the Worcester classification yard. The project will facilitate a head-on move of Unit Trains, alleviating a freight rail bottleneck while also enhancing safer operating conditions.

CSX

CSX operations in Massachusetts now feature full Phase II double stack container freight due to recent clearance increases. CSX recently expanded and modernized the Worcester Intermodal Facility located along Franklin Street. The expansion of the Worcester yard represents an investment in excess of $100 million. The Worcester facility mainly handles domestic containers and trailers on flatcar. Similarly, in nearby Westborough, another intermodal freight yard was improved within its existing footprint to handle bulk materials transloading. Materials handled include corn syrup, chemicals, pellets and other commodities. Economic spin-off is anticipated

from the presence of both modernized CSX yards. In response to a request from the Regional Chamber of Commerce, a parallel CMRPC agency effort has focused on the potential for rail served freight opportunities within a 20-mile radius of the Worcester yard.

East Brookfield & Spencer Railroad (EB&S RR)

East Brookfield & Spencer Railroad (EB&S RR) serves as the switching railroad for the New England Automotive Gateway (NEAG) located in the namesake host communities. Since the site was developed as a major automotive rail-to-truck transload facility serving all of southern New England, a range of mitigation measures have been implemented. Recent site improvements included expansive earthwork to provide additional railroad track capacity for railcar staging and storage. At the site, the EB&S RR works to unload the railcars and ready them for the return trip to automotive plants. Final "last mile" delivery of the finished vehicles throughout the greater New England area is completed by a number of trucking companies that serve the NEAG site. Clearance improvements along the CSX Boston Line will allow for "AutoMax" railcars to serve the site, increasing capacity. Also, EB&S worked closely with CSX to reduce the number of train whistle blasts in vicinity of the yard using a radio & flag person arrangement. It is likely that other future improvement projects are planned for the NEAG site.

Grafton & Upton Railroad (G&U RR)

The Grafton & Upton Railroad (G&U) is a short line railroad operating in the region. Following the resolution of recent litigation with the host community of Grafton, the railroad is proceeding with the construction of a new propane transfer facility in North Grafton. Other efforts by the G&U include work to reestablish a severed rail connection to CSX in Milford. This would allow the railroad to transfer freight with CSX in Milford in the south in addition to CSX in North Grafton. Further, freight yard improvements are ongoing in both Hopedale and West Upton.

MassCentral Railroad (MC RR)

Rural carrier MassCentral Railroad (MC), operating in the Ware River Valley between Palmer and South Barre, recently benefited from state-funded track improvement work. The MassCentral operates over trackage owned by the Commonwealth. Various rail-related activities continue at the South Barre industrial park known as Phoenix Plaza. This facility allows for convenient last mile delivery in this rural part of the planning region.

North Brookfield Railroad (NBRR)

The North Brookfield Railroad (NBRR), long dormant, is planning to restore track infrastructure and reestablish operations in its namesake community. The NBRR is viewed as the resurrection of a community-owned rail line dormant since the 1970's. In order to generate railcar traffic, a number of line side industries are envisioned. As an example, perhaps a paving stone manufacturer located along the line's right-of-way would one day reinstitute rail service. As part

of the rail line's envisioned restoration, an at-grade crossing over Route 9 in East Brookfield will need to be reestablished.

Pan Am Southern (PAS)

The P&W Railroad may determine the need to implement clearance increases on the carrier's line between Worcester and Gardner. In Gardner, the P&W interchanges with Pan Am Southern (PAS). PAS is a freight rail carrier operated jointly by Pan Am Railways and Norfolk Southern (NS). Along the PAS line in the northwest corner of Massachusetts is the Hoosick Tunnel, 5 miles in length. Engineering studies are now underway to determine the effort necessary to undertake a project to increase clearances in the tunnel to accommodate full double stack service. Preliminary estimates indicate an investment ranging from $30-50 million. When the envisioned improvements are completed, double stack trains from the west could be interchanged in Gardner and then proceed to Worcester on the P&W. With the planned Hoosick Tunnel double stack clearance improvements, as well as necessary clearance improvements on the Gardner Branch, P&W will have the ability to receive containers from both CSX and NS.

Providence & Worcester Railroad (P&W RR)

Regional freight carrier the Providence & Worcester Railroad (P&W) is headquartered in Worcester. The P&W's namesake rail line in the Blackstone Valley requires the replacement of five (5) aging bridge structures in excess of 100 years in age. These bridges are worn due to years of constant use and repetitive loading. They cannot be effectively maintained due to archaic assembly methods no longer used or supported. The replacement of the structures is necessary to accommodate fully loaded modern freight cars weighing 286,000 pounds. At this time, freight cars must be "light loaded" in order to pass over the line. The cost of replacing these structures is estimated at $30M. The P&W has been unsuccessful in obtaining US DOT TIGER funding for this project on the national level. As such, other opportunities for funding the replacement of the five bridges are being investigated.

The planning staff has also provided limited assistance with two P&W RR applications for improvement funding through MassDOT's Industrial Rail Access Program (IRAP) grant program. One focused on the replacement of a small bridge structure serving an active set of switching tracks worn after decades of service. The other IRAP application, pending at the time of writing, seeks the rehabilitation of an approximately 400 foot "wye" track and three switches connecting P&W's Norwich Branch and Main Line track, located at opposite sides of P&W's Southbridge Street yard. The project will facilitate a head-on move of unit trains from the Norwich branch to the main line, alleviating a freight rail bottleneck for unit trains as well as the hundreds of other railcars moving through P&W's yard facility on a daily basis.

In addition, other P&W lines may need to be cleared in order to accommodate full double stack container service in the future, increasing system capacity. For example, in the host community of Auburn, the under-clearance of the Route 20 bridge over the P&W Railroad is insufficient to accommodate full double stack service. Should double stack trains use this line in the future, clearance increases would be required for this structure. Elsewhere on the P&W rail network in the greater region, modest improvements are planned, such as the repair, replacement or installation of switches and rail sidings.

Intransit Container Incorporated (ICI)

Intransit Container Incorporated (ICI) operates the Wiser Avenue intermodal container yard in the city of Worcester. The ICI facility is served by the P&W Railroad. ICI's focus is international container traffic from around the globe. The site is a customs-bonded, inland port. Yard expansion at the Wiser Avenue site is underway and many recent improvements have been made. In addition to more property for container and chassis storage, the yard will also have improved lift capabilities, speeding operations. Overhead power lines on the site are planned for burial, increasing the maneuverability of the lift equipment. Further, along with the expansion, ICI has implemented a range of mitigation measures, including an impressive wall shielding site operations as well as environmental work associated with identified wetlands.

Regional Strategies to Reduce Impact of Multimodal Freight Movement

Overview

In order to reduce the local impacts from expanded freight capability in the Central Massachusetts planning region, the following suggested improvement options were previously compiled as part of ongoing freight planning activities. The options are provided for further consideration by host communities, intermodal facility operators, area freight transportation providers, and the CMMPO.

- Prohibit on-street vehicle parking adjacent to and across from intermodal facility site drives.
- Keep site drive areas clear of all obstacles such as large signs, street furniture, utility poles and overgrown vegetation.
- Provide adequate truck turning radii at major intersections, optimally to fully accommodate the movement of 53 foot international intermodal containers.
- Maintain and resurface roadway pavement surfaces as deemed appropriate.
- Maintain all traffic control signs, signals and pavement markings.

- Consider identification and designation of "Preferred Truck Routes" throughout the greater region. Such an effort could be pursued by the host communities of intermodal transload facilities. As an example, officials in the host community of Oxford have indicated that trucking activities in the community attempt to avoid the intersection of Route 12 with Sutton Avenue in the town center.

- A "Supplemental Guide Sign" plan should be considered for the region's primary National Highway System (NHS) freight routes serving major intermodal facilities. These roadways provide access between the Interstate System, major regional highways and major intermodal terminals. Such Supplemental Guide Signs (as included in the Manual on Uniform Traffic Control Devices [MUTCD]) would assist truckers and others unfamiliar with the area in following the primary NHS freight routes connecting to the region's intermodal facilities. Supplemental Guide Signs are considered "trail blazing" or "wayfarer" signs. As indicated in the MUTCD, Supplemental Guide Signs can be used to provide information regarding destinations accessible from an interchange, over and above those shown on standard signing. An example of this type of sign is shown in Figure IV-27.

WRMS Improvement Options for Multimodal Freight Movement

The Worcester Regional Mobility Study (WRMS) is a multi-modal transportation report that focused on the region's core community of Worcester and the immediate surrounding towns. The WRMS was completed in 2011. Freight-related improvement options to reduce the local impacts from expanded freight capability in the region's core included in the WRMS are summarized as follows:

- **Supplemental Guide Sign Plan**: Improve "wayfarer" or "trail blazing" on I-290 to/from the city's major truck-rail intermodal yards. This includes the CSX Franklin Street yard, P&W's Southbridge Street yard and Intransit Container's (ICI) Wiser Avenue yard.

- **Route 122 Kelly Square Bypass**: A conceptual plan has been suggested to minimize regional car and truck traffic in this identified bottleneck location. Potential routing for the Bypass would use an extension of Winter Street adjacent to the elevated CSX railroad tracks to Gold Street, continuing to Madison Street. This option would serve to reduce regional traffic volumes and heavy vehicles from both Water and Harding Streets, thus reduces associated turning movements in the heart of Kelly Square.

- **Potential "Truck Routing" Assessment**: Suggested by the WRMS as a future effort, this proposed regional study would identify "Preferred Truck Routes", identified bottlenecks to avoid, residential areas to avoid, low bridge clearances and other impediments to the efficient movement of freight. Pertinent examples in the city

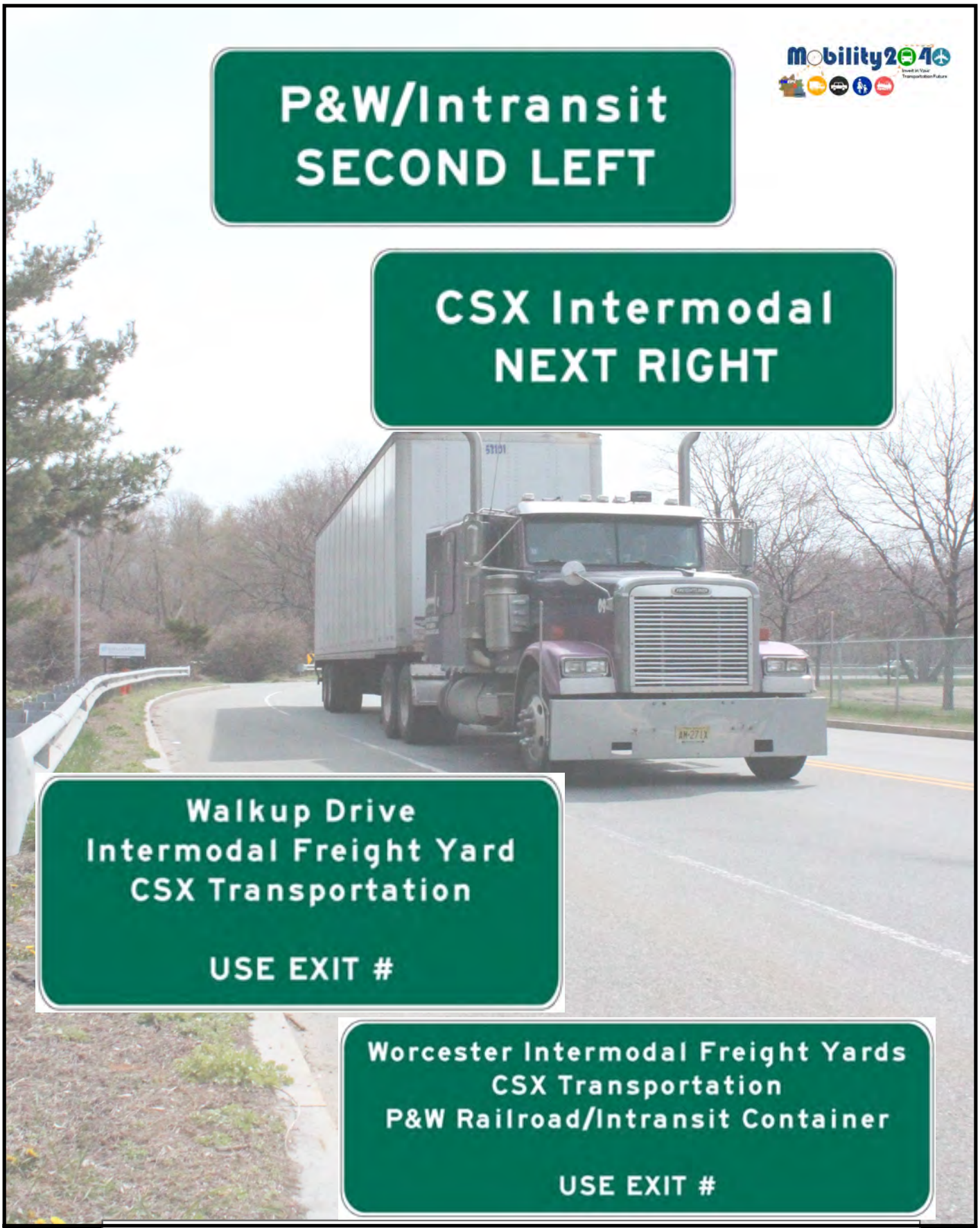


Figure IV-27
Supplemental Guide Sign Examples For Major Intermodal Facilities

Worcester include the low bridge on Cambridge Street as well as periodic flooding on Southbridge Street. Outreach to major trucking stakeholder UPS is anticipated.

Site-Specific Mitigation for Multimodal Freight Movement

In order to reduce the local impacts from expanded freight capability, the following suggested site-specific mitigation options were compiled based on various examples found in the greater region. They are included for the consideration of host communities and intermodal facility operators.

- Install noise attenuation walls and/or earthen berms to reduce noise while also shielding site operations.
- Use vegetation and other plantings to not only beautify but also to shield site operations and reduce noise.
- Consider facility hours of operation, the implementation of "quiet times" as well as procedures to reduce truck trip generation.
- When considering overhead lighting fixtures, attempt to reduce light "spillover" to adjacent sites.
- Consider use of "hostler" trucks to move trailer, chassis and containers internally on site, minimizing the need for full size trucking maneuvers, reducing both noise and emissions.
- At rail served sites, consider the use of low emissions locomotives and Auxiliary Power Units (APUs) to reduce emissions and unnecessary idling while improving local air quality.

Prioritization

Based on the above discussion, the following top freight-related needs, from both the highway and railroad modes, have been prioritized for further study or implementation.

Highway Trucking

The following lists priority trucking-related projects identified in the planning region. These should be considered along with the Major Infrastructure projects for highways identified elsewhere in Mobility 2040. The financially-constrained highway-related Major Infrastructure projects all address various needs of the trucking industry, such as increasing roadway safety and reducing recurring congestion. Others could be implemented by the private sector using private funding, such as full service rest stops catering to trucking. Others may be able to benefit from a

public-private funding scenario, where private funding is used to leverage designated public monies.

- Initiative to consider implementation of full service rest stops in the region serving the trucking industry (private venture). As noted, the trucking community often lacks adequate facilities to park, rest, bathe, eat, purchase fuel and make repairs.
- Consider improvements for trucking associated with UPS distribution facility in Shrewsbury. A recent Road Safety Audit (RSA) was conducted at the adjacent intersection of US Route 20 and Grafton Street. Route 140 is also located adjacent to the UPS site. A prior study of Route 20 through the entirety of Shrewsbury had identified improvements at the Route 20/Grafton Street intersection that addressed congestion, pavement condition, safety as well as freight movement.

Freight Rail

The following lists priority freight rail projects identified in the planning region. Some will be implemented by the private sector using private funding. Others may be able to benefit from a public-private funding scenario, such as the state's Industrial Rail Access Program (IRAP), where private railroad funding is often used to leverage additional public monies.

East Brookfield & Spencer Railroad

- Various future expansion activities, including potential IRAP-funded track improvements.

Grafton & Upton Railroad

- Implementation of various at-grade highway crossing improvements along southern segment of the line.

MassCentral Railroad

- Ongoing track maintenance & various at-grade highway crossing improvements. The MC RR right-of-way is largely owned by the Commonwealth.

North Brookfield Railroad

- Revitalization effort to restore freight service to dormant five-mile railroad while providing opportunities for new line-side industry.

Providence & Worcester Railroad

- Investigate further potential for IRAP-funded track improvements in Worcester Yard.

- Replace substandard railroad bridge over Southbridge Street to accommodate both roadway widening and bridge strengthening for heavier railcars.
- Initiative to consider viability of hosting Worcester-Providence passenger rail service operated by an outside contractor.

Airport

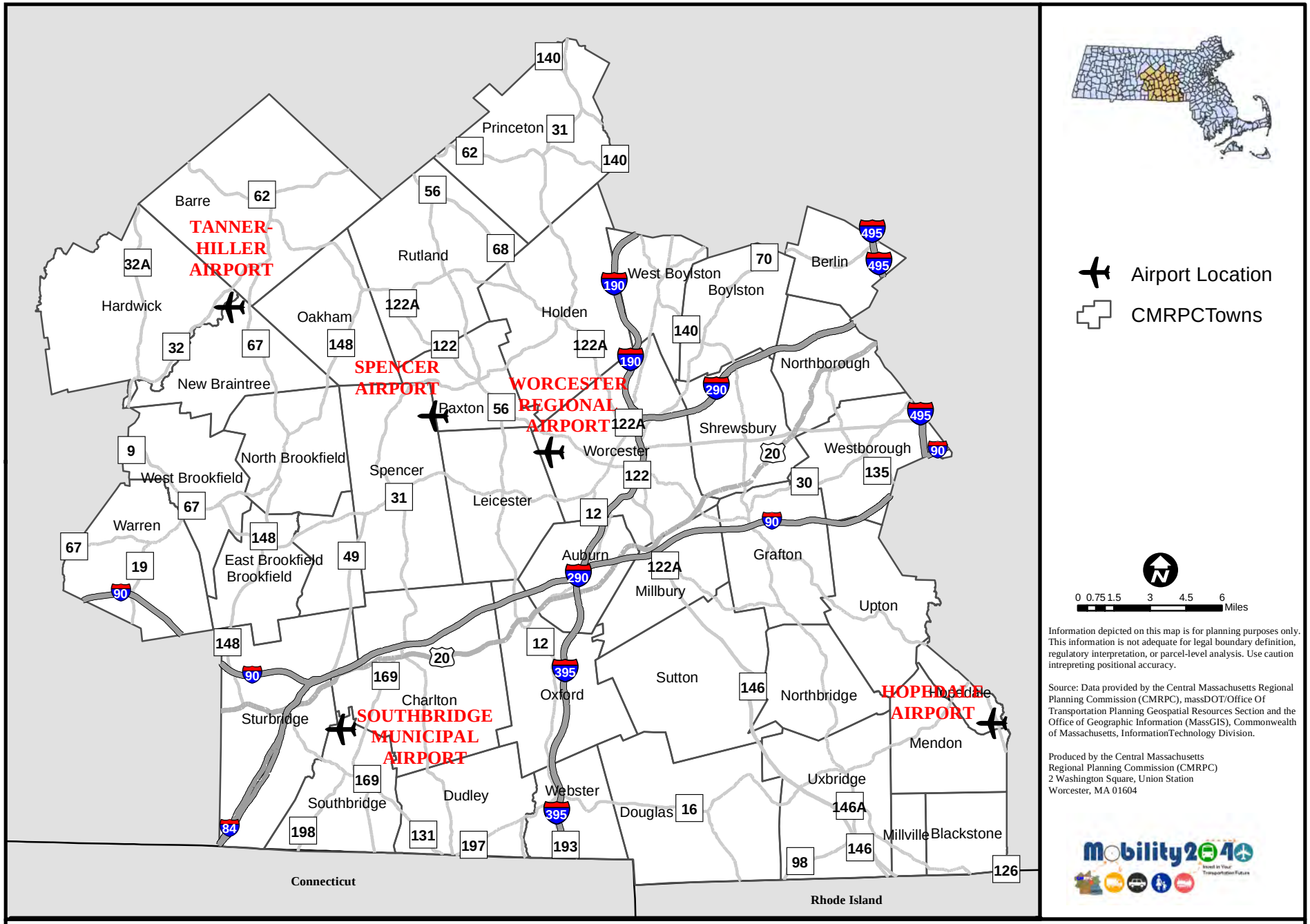
The region's airports are an essential component of the overall transportation system in Central Massachusetts. They serve a variety of purposes, including personal, business, and recreational travel as well as freight movement. Both people and goods are moved by air transportation. Although the number of passengers and the volume of freight moved by air may be relatively small compared to that of other modes serving the region, air transportation plays an important role.

The five airports located within the Central Massachusetts region are illustrated in Figure IV-28. The airports shown are Hopedale Industrial Park Airport, Southbridge Municipal Airport, Spencer Airport, Tanner-Hiller Airport in New Braintree, and Worcester Regional Airport. All five have been designated by the Massachusetts Aeronautics Commission (MAC) as part of the statewide airport system. The purpose of the statewide airport system is to ensure that all areas of Massachusetts are accessible by air. With the exception of Worcester Regional Airport, these sites are all utility airports that are designed to accommodate smaller, lighter, general aviation aircraft. Worcester Regional Airport is classified as a "General Transport Airport".

Worcester Regional Airport

Existing Condition and Future Needs

Worcester Regional Airport is relatively sparsely used today in comparison to its own recent past and to the levels of other major regionals. The reasons for this are many, and it is unclear which holds the greatest weight. Pricing has always been a problem, yet low-cost service has not thrived. It is sometimes challenging to locate and travel to Worcester airport, but over the years, people have been able to “get there from here”, at least locally. Many believe that improved access would help generate increased passenger service; others take the point of view that other market forces would need to encourage the provision of new service which would in turn spur the need for appropriate ground linkages. It is noted that the advent of GPS access to drivers has diminished some of the need to have major access roadways, particularly since a very large share of the market is local and coming from multiple directions. In general, today’s smaller airports do not generate enough traffic to fill larger planes multiple times a day, thus failing to attract and retain the low-fare airlines that select and survive in markets with larger volumes.



Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution intrepreting positional accuracy.

Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT/Office Of Transportation Planning Geospatial Resources Section and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, InformationTechnology Division.

Produced by the Central Massachusetts Regional Planning Commission (CMRPC)
2 Washington Square, Union Station
Worcester, MA 01604

Figure IV-28 Locational Map of the Region's Airports

At one time, the future use of the site of Worcester Airport was unclear. But now, with Massport's financial and business investment, it will be retained as an air facility, with cargo/general aviation emphasis, while setting the stage for the day when the local flying public begins to seek an easier, more convenient, less congested outlet with a suitable flight selection for long-range travel. Abandonment of the site as a functioning airport, as had once been discussed, would require the repayment of millions of dollars of aviation-associated grants over recent years. Now the future direction of the facility has been determined, and it will be led by an agency which is in the transportation business.

Massport once said that Worcester could someday be a major air transportation center under the right conditions, carrying up to a million passengers a year, ten times what it did a few years ago and three times its best year ever. The New England Regional Airport System Plan (NERASP) suggested that Worcester Regional Airport could eventually handle 1.5 million passengers – if infrastructure and access were improved and airlines were in fact willing to offer service to popular destinations. Current medium-growth planning scenario updates estimate a passenger activity level of nearly 300,000 by 2030.

Regarding access, Massport, MassDOT, the City of Worcester and the CMMPO developed a plan for improving directional signage to ORH for the near-term. Due to the fact that a large percentage of Worcester Regional Airport users come from the local Worcester area, there is no one preferred route. Instead, it has been recognized that multiple routes are needed to serve current demand. Six primary routes that travelers now use to access the airport were identified. MassDOT and Massport consulted with local jurisdictions in which the signs would be placed, and MassDOT installed signs that they fabricated. A total of eighty signs were installed on the six primary routes. These consistent signs should be of great help to those seeking quick ground access routes within the area.

An opposing local factor that may be hard to change is the weather. While it has been said that "the perception of the weather issue is worse than the reality here", Worcester airport's siting is not conducive to good flying weather. Its relatively high elevation puts it into fog and clouds often, as well as keeping temperatures about five degrees colder in an area which is very much impacted by winter weather effects. While it is true that flight delay rates are not substantially higher than other locations, the fact remains that landings are often forced to divert to other area airports (at a recent rate of ranging from 3-5% of scheduled arrivals), and departures are often affected by icing conditions not experienced at other nearby regionals.

Enhanced landing equipment in recent years, and the possibility of the installation of a Category III landing system being considered by the FAA for the future, is encouraging. A tree-clearing effort in 2013 resulted in an extended runway visual range with an ability for commercial airlines to land in lower visibility than previously was possible. CAT III systems involve special lighting and aircraft signaling, and many major airlines and pilots are qualified to use them. They technically allow for landing in almost any weather condition. But the timeframe for system installation appears to extend over many years.

It is generally recognized that a viable, functioning airport may be critical to the city and the region's long-term economic development. Every effort should be made to envision, plan and build a total working infrastructure that will make economic contributions in the present as well as when general passenger demand grows again in the future. The general business and governmental community has worked in recent years to overcome the various obstacles.

Other Airports in the Region

Characteristics and Inventory

In addition to Worcester Regional Airport, four other airports serve the Central Massachusetts region. The Southbridge Municipal Airport in Southbridge, the Hopedale Industrial Park Airport in Hopedale, the Tanner-Hiller Airport in New Braintree, and Spencer Airport in Spencer are utility airports that are designed to accommodate smaller, lighter, general aviation aircraft. Table IV-11 lists some of the characteristics of these area airports, along with those of the larger Worcester facility.

As shown in Table IV-11, the majority of the operations at these smaller airports consist of general aviation flights. However, air taxi services are offered at the Hopedale Industrial Park Airport and Southbridge Municipal Airport. Also, a relatively small number of military flights occur at all of these locations.

Of the four utility airports in the region, Southbridge Municipal Airport is utilized the most and has been designated by MAC as part of the statewide airport system. Southbridge Municipal Airport is owned and operated by the Town of Southbridge. The airport is located three miles northwest of downtown Southbridge and approximately five miles from the regional highway system in Sturbridge. The Massachusetts Turnpike (I-90), Interstate 84, and US Route 20 are all accessible via State Route 131 west to Sturbridge.

Table IV-11: Airport Characteristics

	HOPEDALE INDUSTRIAL PARK AIRPORT	SOUTHBRIDGE MUNICIPAL AIRPORT	SPENCER AIRPORT	TANNER-HILLER AIRPORT	WORCESTER AIRPORT
Location	Hopedale	Southbridge	Spencer	New Braintree	Worcester-Leicester
Elevation	269 Ft	699 Ft	1040 Ft	589 Ft	1009 Ft
Runway	18/36	02/20	01/19	06/24	11/29, 15/33
Runway Dimensions	3172'x90'	3500'x75'	1950'x50'	3027'x40'	7000'x150', 5000'x100'
Runway Lighting	Low Intensity	Medium Intensity	Low Intensity	No	High/Medium Intensity
Airport Attended	Dawn-Dusk, Mon-Fri	8 AM-Dusk	9 AM-6 PM, Mon-Sat	8 AM-6 PM M-F 8 AM-4 PM Sat	Continuous
Registered Based Aircraft	14 Single Engine 1 Multi Engine	25 Single Engine 1 Multi Engine 1 Helicopter	25 Single Engine	4 Single Engine	59 Single Engine 6 Multi Engine
Operations Per Year	6,000	31,000	12,000	600	48,000
% Air Taxi	4%	3%	0	0	3%
% Local General Aviation	48%	48%	83%	86%	40%
% Transient General Aviation	48%	48%	17%	12%	55%
% Military	<1%	<1%	<1%	2%	<1%
% Commercial	0	0	0	0	1%

Existing Condition and Future Needs

In the late 1990s, the Tri-community area of Charlton, Southbridge and Sturbridge undertook a Corridor Planning Study. The goal of the study was to identify projects that might alleviate transportation problems in the area bounded roughly by Route 131, Route 169, and US Route 20. Ultimately only Southbridge supported the construction of a “Northern Connector” from US Route 20 in Charlton to a proposed access road which connects to Route 169 in Southbridge. This approach was not favored by either the Charlton or Sturbridge groups because of potential negative impacts to nearby residents and potential environmental and societal impacts.

Southbridge favored this approach as the one providing the greatest reduction of Route 131 traffic and improved access to the regional highway system. Since that time, a link from Route 169 to the Airport/industrial park has been constructed. This link, called Commercial Drive, was completed and opened in 2011. It serves as access to Casella Waste Systems on Barefoot Road as well as being a more convenient, direct link to the airport from the north. The host community hopes that further industrial development can occur on this new roadway as well.

In early 2011 Southbridge Airport was in the midst of undergoing an update to its Airport Master Plan. Additionally, the potential installation of solar energy generation equipment on the site was being pursued with the FAA and other concerned parties.

On June 1, 2011, severe local weather in the form of two tornadoes affected the south-central portion of Massachusetts. One of these travelled to the east just far enough to cross Airport property. Hangars were damaged, some totally, and many aircraft were strewn about as well. Up to $3 million in damage occurred. As this particular area of the storm path was deemed ineligible for federal assistance, insurance and town money needed to be allocated to any rebuilding effort. The FAA hoped to fast-track the master plan update effort in recognition of the need to resume normal operations as quickly as possible.

In mid-2013 Southbridge began exploring alternative uses for the now money-losing facility. Later that year the town began to take steps to evict the airport operator due to failure to meet requirements and funding issues. In March of 2014 consultants were hired to start planning a rebuild of the facility. The town recaptured operation of the airport in May 2014. The state allocated $1 million towards airport renovation at that time as well.

CHAPTER V

Summary of Needs and Analysis

Introduction

The Summary of Needs and Analysis combines multi-modal priorities from three different sources (Management Systems Data, Public Outreach, and Modal Priorities from Chapter IV) to develop a list of potential major infrastructure projects and initiatives based on cost of the projects, project effectiveness and readiness, regional significance and community support. The following will show how the projects were then graded across each of the seven Mobility2040 performance management goal areas to generate a list of scored projects and initiatives. The CMMPO and CMMPO Advisory Committee members placed the projects into tiers, based on how well they met the goals. The recommended list, primarily drawn from Tier 1, are the suite of major infrastructure projects that are part of this plan.

In order to meet financial constraint regulations, the highway major infrastructure projects were broken down into five scenarios for analysis. The projects were placed in financially constrained five-year bands that could be implemented through 2040. The scenarios were used as inputs for the Travel Demand Model, and assessed for the following factors:

- congestion reduction and savings in vehicle miles travelled
- greenhouse gas effects
- geographic equity
- environmental justice benefits and burdens
- consistency with prior public input

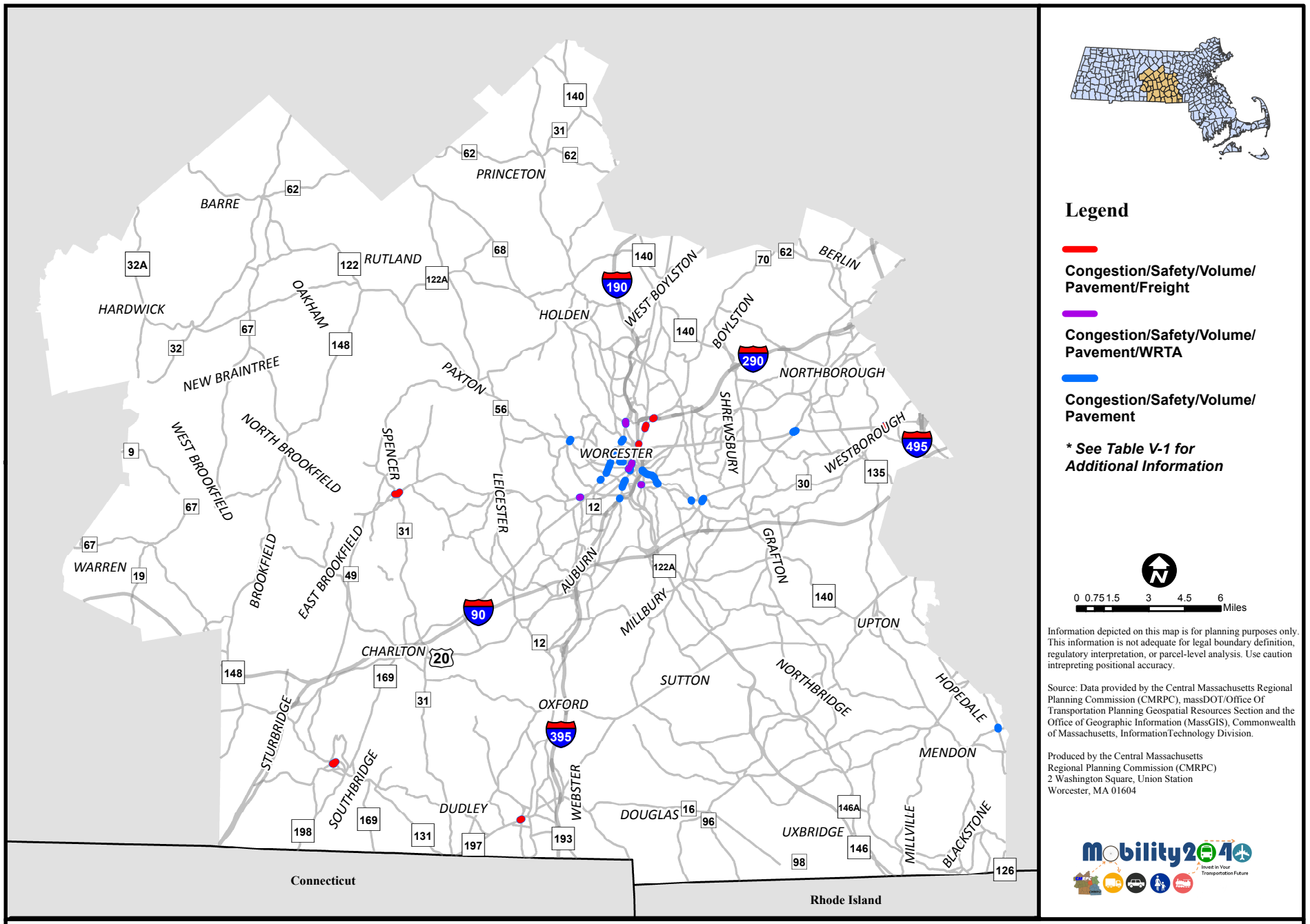
Based on the process described over the following pages, the CMMPO chose the suite of projects and the initiatives presented toward the end of this chapter and in Chapter VI.

Summary of Needs

Data Informed Regional Priorities (Management System Data Integration)

Regional Priorities have been developed through a Management Systems approach, resulting in a number of “corridors” that demonstrate the greatest need for improvement. The Management Systems approach combines congestion, safety, traffic volume, pavement condition, transit use, freight movement, and environmental justice related data in order to define “hot spots” throughout the CMRPC planning region. The resulting corridors have been added to the regional needs; andare listed by municipality in the table on page V-5. Locations highlighted in orange are current/recent Transportation Improvement Program (TIP) projects or initiatives; they have been included to show the progress the CMMPO has made in addressing the region’s hotspots.

The following map and table highlight the locations derived from the analysis described in the previous paragraph.



Legend

Congestion/Safety/Volume/ Pavement/Freight

Congestion/Safety/Volume/ Pavement/WRTA

Congestion/Safety/Volume/ Pavement

**** See Table V-1 for Additional Information***

0 0.75 1.5 3 4.5 6 Miles

Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution intrepreting positional accuracy.

Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT/Office Of Transportation Planning Geospatial Resources Section and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, InformationTechnology Division.

Produced by the Central Massachusetts Regional Planning Commission (CMRPC)
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Figure V-1 Management Systems - Data Integration Map

Table V-1 - Management Systems Analysis

Location	Congested	High Crash	High Volume	Poor Pavement	WRTA	Freight
Worcester	X	X	X	X		
Southbridge Street Corridor						
@ Interstate 290	X	X	X	X		
@ Hammond Street	X	X	X	X		
Madison Street to Myrtle Street	X	X	X	X		
Grafton Street Corridor						
Posner Square to Rice Square	X	X	X	X		
@ Sunderland Road	X	X	X	X		
Park Avenue Corridor						
May Street to Pleasant Street	X	X	X	X		
@ Highland Street	X	X	X	X		
@ Salisbury Stret	X	X	X	X		
Grove Street Corridor						
Grove Street to Chadwick Street	X	X	X	X	X	
Main Street Corridor						
Madison/Chandler Streets to Myrtle Street	X	X	X	X	X	
Franklin Street to Pleasant Street	X	X	X	X	X	
@ Curtis Parkway	X	X	X	X	X	
Mill Street Corridor						
@ Tatnuck Square Area	X	X	X	X		
US-20 Corridor						
@ Sunderland Road	X	X	X	X		
Lincoln Street Corridor						
Salisbury Street to Goldsberry Street	X	X	X	X	X	X
McKinley Road to Burncoat Street	X	X	X	X	X	X
@ Interstate 290 Access Road	X	X	X	X	X	X
Pleasant Street Corridor						
@ West Street	X	X	X	X		
Winthrop Street Corridor						
@ Vernon Street	X	X	X	X	X	
Southbridge						
Main Street Corridor						
@ High Street	X	X	X	X		X
@ Hamilton Street	X	X	X	X		X
Spencer						
Main Street Corridor						
Pleasant Street to Grove Street	X	X	X	X		X
Northborough						
MA-9 Corridor						
@ US-20	X	X	X	X		
Westborough						
MA-9 Corridor						
@ MA-30	X	X	X	X		X
Dudley						
MA-12 Corridor						
@ MA-197	X	X	X	X		X
Hopedale						
MA-140 Corridor						
@ Hartford Avenue East	X	X	X	X		

Projects highlighted in orange are either current or recent Transportation Improvement Program projects, or they are the subject of current or recent initiatives

Stakeholder/Public Input Regional Priorities

Regional Priorities were also developed in consultation with the CMMPO, MassDOT, regional stakeholders, as well as through public outreach efforts. CMMPO staff worked to develop a list of larger, long-term priorities and needs that would improve the transportation system for all modes based on the collected inputs. The resulting locations or initiatives have been listed below as well as highlighted in Figure V-2; the initiatives have an asterisk to provide clarity.

Highway

- I-90 (Mass Pike)/I-495 Interchange – Westborough/Hopkinton
- I-495/MA-9 Interchange – Westborough/Southborough
- I-290/Vernon Street/Kelley Square Bridge Expansion – Worcester
- MA-9/US-20 Interchange – Northborough
- US-20 Corridor – Charlton/Oxford
- US-20 Corridor – Worcester
- MA-146/Boston Road Interchange – Sutton
- I-90 (Mass Pike)/MA-146/US-20 Interchange – Millbury
- MA-9 Corridor – West Brookfield
- MA-146 Frontage Roads – Millbury/Sutton
- MA-31 Corridor Improvements – Holden/Paxton/Spencer
- Kelley Square Bypass – Worcester

Bicycle/Pedestrian

- Boston-Worcester Air-Line Trail – Shrewsbury/Westborough
- Blackstone River Greenway (Segments 3,4,5) – Uxbridge/Northbridge/Grafton/Sutton/Millbury

Transit

- New Fixed Route Buses
- Intelligent Transportation Systems/Transit Signal Priority (TSP) – WRTA Host Communities*
- Transit “Mini-Hubs” – WRTA Host Communities*
- Bus Rapid Transit (BRT) or BRT “Light” on Main Street (South) – Worcester*
- Union Station Hub Upgrades/Expansion – Worcester**
- Maintenance & Operations Facility Upgrades/Expansion; Possible 2nd Facility – Worcester*
- Union Station Upgrades – Worcester*

Rail

- Boston-Worcester-Springfield High-Speed Rail (Passenger)*
- Western MBTA Commuter Rail Extension: Worcester-Springfield*
- Worcester-Providence Passenger Rail + Improvements*
- Worcester-New London Passenger Rail + Improvements*
- MBTA Commuter Rail Station Upgrades – Worcester, Grafton, Westborough
- CharlieCard Ticket Vending Machines (TVM) – Regional

Freight Rail

- East Brookfield & Spencer Railroad Expansion & Improvements – East Brookfield/Spencer
- Grafton & Upton Railroad At-Grade Highway Crossing Improvements – Hopedale
- MassCentral Railroad Maintenance + Improvement – Hardwick/Barre
- North Brookfield Railroad Revitalization – East Brookfield/North Brookfield
- Providence & Worcester Railroad:
    - (5 Major Bridges) – Blackstone/Millbury/Millville/Sutton/Uxbridge
    - IRAP Track Improvements – Worcester
    - Southbridge Street Overpass – Worcester

Highway Trucking

- Full Service Rest Stops in the Region for Trucking Industry (Private Venture)*
- Improvements for Trucking Associated with UPS in Shrewsbury (US-20/Grafton Street Intersection + MA-140 Nearby.)

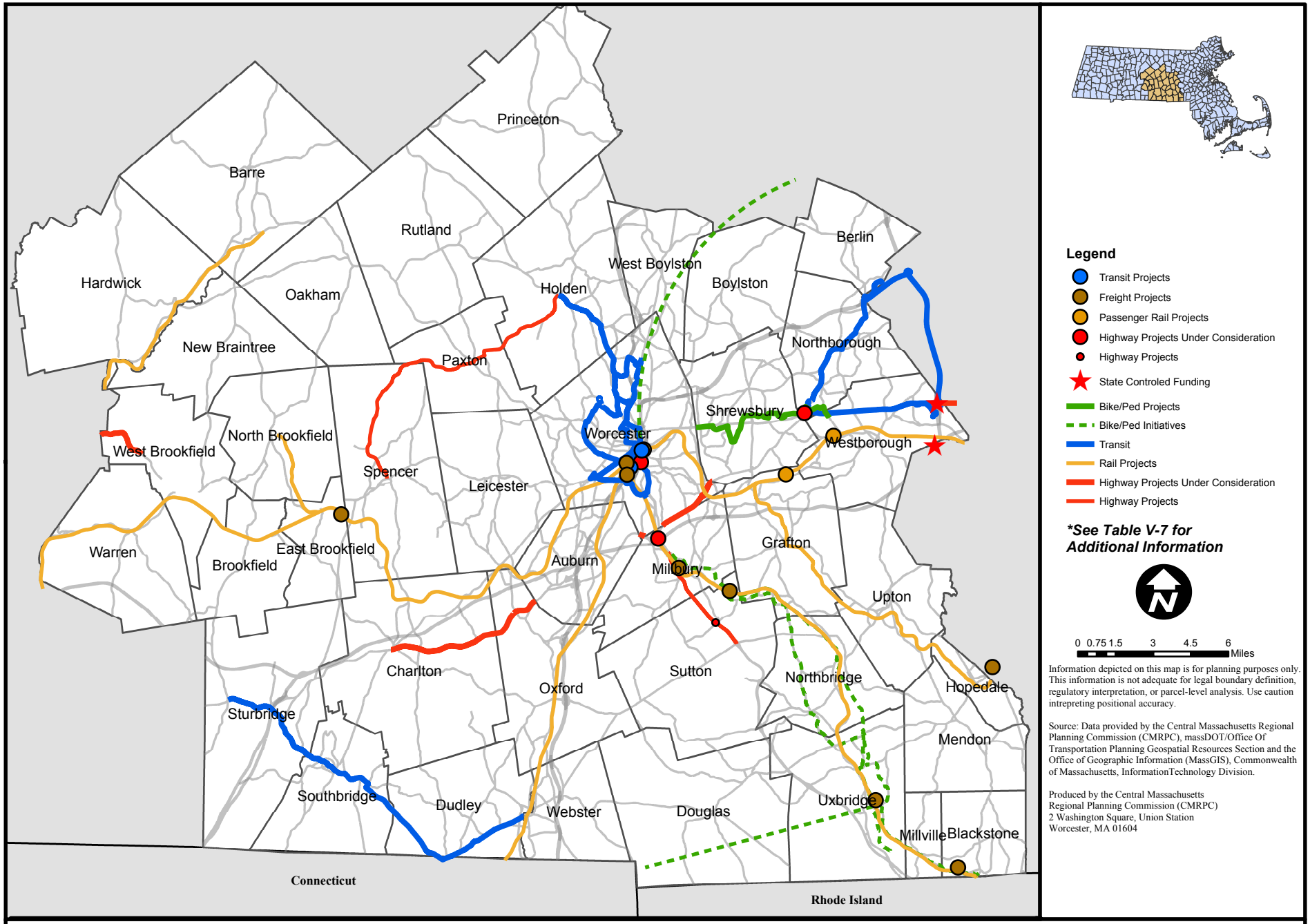


Figure V-2 Preliminary Major Infrastructure

Individual Area/Mode Regional Priorities

Pedestrian

Needs / Next Steps

CMRPC staff will update the Regional Bicycle and Pedestrian Plan during 2015-2016 with further analysis and extensive stakeholder outreach. Emphasis on Access to Essential Services will guide the development of the updated regional plan, along with input from regional stakeholders and the public. For the purposes of Mobility 2040, preliminary analysis has taken place regarding bicycle and pedestrian related crash clusters as well as sidewalk condition on some of the Federal Aid Eligible roadways in the region.

The Massachusetts Department of Transportation generates a listing of Highway Safety Improvement Program (HSIP) eligible Auto, Bike, and Pedestrian clusters for the Commonwealth. A list of HSIP eligible locations for the CMRPC planning region was derived from the statewide list. Ten (10) pedestrian crash clusters have been identified as HSIP eligible for the region.

Prioritization

For the purposes of Mobility2040, the crash clusters that are HSIP eligible are considered highest priority. There is a large concentration of bicycle and pedestrian HSIP clusters within a half mile of the intersection at Main Street and Chandler Street/Madison Street in Worcester. This intersection is also located within feet of the highest ranking automobile cluster in the region (#8 Statewide). A recent Road Safety Audit concerning the Main Street/CBD project in Worcester analyzed this high crash location. Furthermore, a MassDOT project to reconstruct the Belmont Street Bridge over Interstate 290, another high bicycle and pedestrian crash location, is currently underway. A Road Safety Audit was performed at this location, and the results of that exercise have been incorporated into the reconstruction effort. The only HSIP eligible pedestrian cluster outside of the City of Worcester is located in the center of the Town of Spencer. Please see the 2009-2011 CMRPC Regional Safety Report for expanded discussion regarding other non-HISP eligible pedestrian crash clusters.

Table V-2 on the following page provides a listing of the prioritized pedestrian crash clusters for the region ranked by EPDO. Candidate projects must be locations where the data indicates a high incidence of crash severity based on the Equivalent Property Damage Only (EPDO) index: ▫ Property Damage = 1 Point ▫ Injury = 5 Points ▫ Fatality = 10 Points.

Table V-2: 2009-2011 High Priority Pedestrian Clusters in the CMRPC Region

Crash Count	# Fatal	# Injury	# Non-Injury	EPDO	Street #1	Street #2	Town	Rank
103	0	79	24	419	MAIN STREET	SOUTHBRIDGE STREET	WORCESTER	3
37	0	26	11	141	MAIN STREET	CAMBRIDGE STREET	WORCESTER	
26	0	20	6	106	MAIN STREET	HAMMOND STREET	WORCESTER	
25	0	20	5	105	MURRAY AVENUE	MAIN STREET	WORCESTER	
24	1	17	6	101	MAIN STREET	MECHANIC STREET	SPENCER	
22	0	18	4	94	GRAFTON STREET	ORIENT STREET	WORCESTER	
24	1	14	9	89	BELMONT STREET	INTERSTATE 290	WORCESTER	
18	0	16	2	82	BELMONT STREET	EASTERN AVENUE	WORCESTER	
18	1	11	6	71	PARK AVENUE	PLEASANT STREET	WORCESTER	
19	0	12	7	67	INTERSTATE 290	VERNON STREET	WORCESTER	

Bicycle

Needs / Next Steps

As mentioned in the Pedestrian section, CMRPC staff will update the Regional Bicycle and Pedestrian Plan during 2015-2016 with further analysis and extensive stakeholder outreach. Emphasis on Access to Essential Services will guide the development of the updated regional plan, along with input from regional stakeholders and the public. For the purposes of Mobility 2040, preliminary analysis has taken place regarding bicycle and pedestrian related crash clusters as well as shoulder width on some of the Federal Aid Eligible roadways in the region.

The Massachusetts Department of Transportation generates a listing of Highway Safety Improvement Program (HSIP) eligible Auto, Bike, and Pedestrian clusters for the Commonwealth. A list of HSIP eligible locations for the CMRPC planning region was derived from the statewide list. Six (6) bicycle crash clusters have been identified as HSIP eligible for the region.

Prioritization

For the purposes of Mobility2040, the crash clusters that are HSIP eligible are considered highest priority. There is a large concentration of bicycle and pedestrian HSIP clusters within a half mile of the intersection at Main Street and Chandler Street/Madison Street in Worcester. This intersection is also located within feet of the highest ranking automobile cluster in the region (#8 Statewide). A recent Road Safety Audit concerning the Main Street/CBD project in Worcester analyzed this high crash location. Furthermore, a MassDOT project to reconstruct the Belmont Street Bridge over Interstate 290, another high bicycle and pedestrian crash location, is currently

underway. A Road Safety Audit was performed at this location, and the results of that exercise have been incorporated into the reconstruction effort. Please see the 2009-2011 CMRPC Regional Safety Report for expanded discussion regarding other non-HISP eligible bicycle crash clusters.

Table V-3, below, provides a listing of the prioritized bicycle crash clusters for the region ranked by EPDO. Candidate projects must be locations where the data indicates a high incidence of crash severity based on the Equivalent Property Damage Only (EPDO) index: ▫ Property Damage = 1 Point ▫ Injury = 5 Points ▫ Fatality = 10 Points.

Table V-3: 2009-2011 High Priority Bicycle Clusters in the CMRPC Region

Crash Count	# Fatal	# Injury	# Non-Injury	EPDO	Street # 1	Street #2	Town
10	0	8	2	42	INTERSTATE 290	BELMONT STREET	WORCESTER
9	0	7	2	37	MAIN STREET	OREAD STREET	WORCESTER
10	0	6	4	34	MAIN STREET	MURRAY AVENUE	WORCESTER
6	0	6	0	30	FRANCIS J. MCGRATH BOULEVARD	MADISON STREET	WORCESTER
9	0	5	4	29	CHANDLER STREET	AUSTIN STREET	WORCESTER
8	0	5	3	28	PARK AVENUE	MILL STREET	WORCESTER

Public Transit and Passenger Rail

Fixed Route and Paratransit

Congestion / On-Time Performance

Needs/Next Steps

There are many congestion improvement options to consider in an effort to maintain on-time performance for fixed-route and paratransit service. Short-term improvements include:

- adjusting signal timing and phasing
- maintaining traffic control signage and pavement markings
- maintaining good pavement condition
- trimming overgrown vegetation along roadways that impair vehicle sight lines
- maintaining roadway drainage structures
- Access Management techniques.
- upgrading or developing electronic systems (radio, telephone, internet) to communicate within the WRTA and among various organizations

- developing/updating protocols for how internal and external communications should occur
- continued success of the Mobility Management Model (MMM) depends on further automation of the scheduling and dispatching responsibilities, in addition to a well trained staff.

Long-term options that are more costly and take greater amount of time to implement include: intersection realignment, installation of a modern roundabout, building additional lanes to increase capacity, and incorporating Intelligent Transportation Systems (ITS) capabilities or tools.

Prioritization

In concert with the goals and objectives adopted by the CMMPO, there are certain roadways and intersections that should be improved first. These prioritized locations should have improvements that will alleviate congestion and reduce travel time, particularly where they impact high transit routes. Performance Measures help determine if a project should be undertaken as a result; a project that benefits multiple modes or management systems will get a higher priority over a proposed project that only helps one element.

Using various data acquired by the WRTA through its manual and AVL technology will assist in maintaining or improving schedules that meet on-time performance. Identifying the location of critical peak hour delay intersections can help determine which roadway segments should undergo improvements to reduce travel time and potential bottlenecks. Most of the critical locations are in the City of Worcester and the Town of Shrewsbury. The remaining few are in the Towns of Sutton, Upton, and Webster, of which only Webster is served by fixed route transit.

Improvement of existing Park-and-Ride facilities and the possible addition of more facilities that are connected to transit can help meet the goals of a 5% total automobile VMT reduction and the long term creation of five new Park-and-Ride locations. Further, rideshare programs such as MassRIDES and NuRide will also help with VMT reduction by encouraging travelers to use alternative options such as public transit. Travel demand management (TDM) is another way to reduce traffic congestion by including transit options for commuters.

Safety and Security

Needs/Next Steps

Safety

In 2015, the WRTA will be updating its Safety and Security Program Plan (SSPP). In addition, the WRTA will also update its Continuity of Operations (COOP) Plan from its last update in 2009, as well as its Safety Management System (SMS) to include not only the fixed route system, but also the paratransit system, fixed facilities and vehicle fleets. Lastly, development of a full Emergency Response Plan will also be started in 2015.

Security

CMRPC and Montachusett Regional Planning Commission (MRPC) staff will continue Phase 2 Evacuation planning efforts. Phase 2 will aid jurisdictions in practical application and use of the Phase 1 "Tool Kit'. Phase 2 will continue to align the Central Regional Homeland Security Advisory Council Evacuation Plan strategies and goals with state evacuation plans.

State of Good Repair

Needs/Next Steps

With the anticipated completion of the WRTA's new maintenance and operations facility in the summer of 2016, the major capital improvement projects for the system's operation will be complete. Future SOGR efforts for fixed-facilities will focus on maintaining these for many years, even decades, of good service and system reliability.

Prioritization

Replacement, or possible expansion, of the WRTA's existing bus and van fleet will be the primary focus of new equipment in the coming years. In FY 2016 and FY 2017, the WRTA has programmed six new buses, three in each fiscal year, for fleet expansion. Beginning in FY 2020, the WRTA is expecting to begin replacing its 2008 fixed-route buses. Funding for replacement vans comes from MassDOT through their Community Transit Grants program or through WRTA 5307 capital funds.

Intelligent Transportation System

Needs/Next Steps

Regional transportation stakeholders identified key regional needs for fixed route and demand response transit among other modes. These needs, specific to Central Massachusetts, are:

- Congestion Management
- Transit Efficiency
- Efficient Use of Existing Infrastructure
- Economic Development
- Safety and Security
- Communications Infrastructure
- Traveler Information
- Use of ITS Data

Multi-function Program Areas were also developed as part of the ITS Architecture Implementation Plan and they include:

- Electronic Toll Collection Integration for Parking – Future initiative for MassDOT, MBTA, and community parking facilities that have controlled access.
- Regional Fare Card Integration for Parking – Future initiative for MassDOT, MBTA, and community parking facilities that have controlled access.
- CAD/AVL (Computer Aided Dispatch/Automated Vehicle Locator) for Transit Vehicles – Currently being deployed by the Worcester Regional Transit Authority (WRTA)
- Traffic Signal Priority – A future initiative for reducing congestion delays for WRTA buses.
- Regional Fare Card – Deployed in spring 2012, this initiative provides an interoperable fare medium allowing riders to use the WRTA, MBTA and other participating RTAs.

Prioritization

As identified in the 2011 Worcester Regional Mobility Study, Transit Signal Priority (TSP) and Roadway Variable and Dynamic Message Signs (V/DMS) are valuable Intelligent Transportation Systems options for Central Massachusetts' urban core. Both TSP and V/DMS would help reduce vehicle emissions through more efficient bus and van system operations and added potential for drivers to avoid congested routes thus creating less gridlock for buses and vans that have to travel these routes. More efficient (and potentially more expansive) bus and van service provides a benefit to EJ populations along corridors where TSP is implemented. Businesses along these corridors could benefit from TSP implementation through added transit services. While additional corridors, such as Park Avenue and Shrewsbury Street, are being assessed by the WRTA, City of Worcester and the CMMPO for future TSP implementation, a final strategy has yet to be determined. In addition, further expansion of the WRTA's paratransit Mobility

Management Model to neighboring communities would allow for more efficiencies through ITS technology.

Access to Essential Services

Needs/Next Steps

Based on the WRTA's Comprehensive Service Analysis (CSA) recommendations and analysis, there is an expressed need to increase the number of fixed routes operating for weekend service, as well as schedule improvements along mainline corridors for improved access to essential services that are only available now on weekdays. In this regard, the WRTA has identified Main Street and Lincoln Street in the City of Worcester as mainline corridors that could benefit from higher frequencies. Doing so would require adjusting route schedules of mainline core routes, which are currently interlined/paired together. Also, the WRTA has identified the need for more "cross-town" opportunities beyond the current bus pairings and outside the "hub-and-spoke" alignment of routes.

Other areas with identified needs are the towns of North Brookfield, Ware and West Brookfield. In the CMRPC *Rural 11 Prioritization Project* study, the Town of Warren was identified by community leaders as a potential connection hub for the Pioneer Valley Transit Authority (PVTA) and the WRTA. A rural route or service connecting Ware and the Brookfields was also identified. Work done by the Central Massachusetts Regional Coordinating Council (RCC) also identified the need for more transit service in the western part of the region, mainly for access to job opportunities. The CSA also supplements this perceived need by also recommending a connection with the PVTA's Ware Shuttle from West Brookfield.

Currently, the towns of Hardwick and Ware have expressed a need to improve access to essential services and have discussed these issues at RCC meetings. As towns at the edges of RTAs and not within the WRTA, both are isolated from the core of their respective service areas. Additionally, both are rural towns with limited service which significantly adds to the vehicle hours and miles, and reduces efficiencies. Working to change and improve the service will require assistance at the local, regional, and state levels.

The WRTA has also developed five distinct ADA paratransit eligibility applications in an effort to simplify the process for applicants and ask targeted questions about how the applicant's disability prevents them from using the fixed route service. With hope of having one application

for all Massachusetts RTAs, MassDOT has formed a Common Application committee. This application is currently under review.

WRTA is also planning on joining other RTAs on Ride Match software to improve online service information dissemination in a one-stop-shopping model. Ride Match would provide the public information on available public and private alternatives to get from point A to point B within communities and across the state.

Other service opportunities exist on the fringe of the current fixed-route system. These options would increase mobility options, provide more access to essential services and create new mode options not currently available. A potential transit corridor has been identified in the southernmost part of the region, connecting the towns of Dudley, Southbridge, Sturbridge and Webster. Input gathered for the CSA from multiple public meetings, surveys and meetings with community organizations coincide with the need to connect these towns.

Lastly, improved transit services for college students were also identified as a need in the CSA. The Higher Education Consortium of Central Massachusetts (HECCMA), a consortium of the ten (10) colleges in the WRTA region, is currently in conversations with the WRTA to improve transit access to select colleges in Worcester.

Intercity Bus

Needs/Next Steps

Due to Peter Pan and Greyhound operating as private carriers versus public transportation, the CMMPO is not aware of their most pressing future needs. Like other transportation providers, securing funding for maintaining operations is vital and determines system preservation and any plans for potential expansions.

Areas of importance to regional bus mobility are to fill gaps in the existing system and expansion to meet growth in future demand. Some geographic areas and times of day could benefit from bolstered or added service in the Central Massachusetts region, such as:

- Increase service from Worcester to Providence, specifically at times which would benefit potential commuters.
- Alter the current Worcester to Springfield schedule to service its Sturbridge stop in the AM for potential commuters in the CMMPO West (the Brookfields, Spencer, Warren)

and Southwest (Charlton, Southbridge, Sturbridge) sub-regions; the current schedule provides trips only in the mid-day and evening time periods.

- Consider a 'Park and Ride' stop in Palmer along the Worcester to Springfield route, which would provide access to intercity bus service for communities in the CMMPO West sub-region (the Brookfields, Hardwick, Warren).

Further statewide needs and other potential services for both public transportation and regional bus services were identified in the *Massachusetts Regional Bus Study*, completed by CTPS in 2013.

Intercity Rail

Needs/Next Steps

As referenced earlier, providing funding for maintaining operations is vital and determines system preservation and any plans for potential expansions. While the CMMPO does not program funding for either the MBTA commuter rail or Amtrak, they are actively involved in passenger/commuter rail discussions and any future expansion studies/plans.

The Framingham-Worcester commuter rail line continues to have issues with on-time performance. In the past six months (May-October 2014), the line averages an 86% on-time adherence (81.7% May-July, and 90% August-October)[1]. The line suffers from summertime speed restrictions due to the steel tracks "de-stressing", the inability to withstand heat. MassDOT unveiled plans to improve travel times on the line, with work begun in 2014 between Worcester and Grafton and is anticipated to be completed in 2016.

In addition to the MBTA, passenger/commuter rail service between Worcester and Providence has been discussed. The Boston Surface Railroad Co. and the Providence and Worcester Railroad are in the initial stages of conducting a study with the purpose of creating a commuter rail service between the two cities. The projected route would include only one additional stop in Woonsocket, Rhode Island and is anticipated to be a 70-minute trip time.

MassDOT has partnered with its sister agencies in Vermont and Connecticut to initiate a study of the "Inland Route", which would examine a second passenger rail service from Boston to Worcester, Springfield, Hartford, and New Haven, Connecticut. The study would likely include

[1] MBTA, MBTA ScoreCard Archive, http://www.mbta.com/about_the_mbta/scorecard/default.asp?id=18476

potential improvements and recommendations for upgrades to the existing route for higher-speed standards, similar to Amtrak's *Lake Shore Limited*.

Although the MBTA commuter rail service area covers 175 communities, some geographic areas and times of day could benefit from expanded or added service in the Central Massachusetts region, such as:

- Connections to other Regional Transit Authorities (RTA's) at suburban MBTA commuter rail stations are non-existent and would promote inter-modality in the region. For example, the WRTA operates community shuttles to the Grafton and Westborough stations, and would benefit to foster a connection with the MWRTA at either the Westborough or Southborough station.
- Extension of commuter rail service from Worcester to Springfield.
- Examination of passenger/commuter rail service from Worcester to Providence.
- Improved on-time performance.

Auto Travel

Congestion

Needs

The CMMPO planning staff has compiled an extensive listing of CMP intersections that endure recurring congestion. The master listing includes 287 intersections collected over a period of nearly two decades. Of the total number of intersection locations, 74 encounter above average vehicle delay. In order to meet CMMPO established performance management goals, efforts should be made to address identified deficiencies at ten locations prior to the LRTP's 2040 benchmark year. Often, by addressing critical intersection location, operations on adjacent roadway segments can be improved. Further, there are opportunities in the region for improved or new Park and Ride facilities.

Prioritization

For the purposes of Mobility2040, the top 20 congested intersections analyzed through ongoing CMP efforts are considered highest priority. These locations are listed in the included summary table. As mentioned above, an additional 54 critical intersections could also be considered for future year improvements, especially if other performance-based planning targets relating to

pavement and safety are concurrently addressed. By focusing improvement funding on these carefully selected locations, the region's performance-based goals stated earlier in the document can be effectively addressed. In addition, model-driven analysis has indicated locations in the region where new multimodal Park and Ride facilities could eventually be sited. Expanded Park and Ride in the region will also help meet performance-based goals of Mobility 2040.

Table V-4: Top 20 Congested Intersections included in Regional CMP

Community	Intersection	Total Peak Hour Delay
Worcester	Belmont St/Lake Ave	12275
Webster	I-395 NB Ramps/Route 16/Sutton Rd	12080
Worcester	Foster St/Francis J McGrath/Franklin St/Green St	10908
Upton	High St/Hopkinton Rd/School St/Westboro Rd	10862
Worcester	Chandler St/Mower St/Pleasant St	10656
Upton	Route 140/Hartford Ave/Maple Ave	10601
Worcester	Cambridge St/Southbridge St	10501
Shrewsbury	Route 9/South St	9819
Worcester	Park Ave/Salisbury St	9388
Sutton	Route 146/Boston Rd	9340
Westborough	Route 9/Lyman St	8907
Worcester	Cambridge St/Main St/Webster St	8800
Shrewsbury	Main St/N Quinsigamond Ave/Holden St	8563
Worcester	Route 20/Massasoit Rd	8381
Westborough	Route 30/Church St/School St	7795
Worcester	Route 20/Sunderland Rd	7611
Worcester	Plantation St/Lincoln St	7306
Westborough	Route 9/Otis St	6976
Shrewsbury	Route 140/Main St	6802
Shrewsbury	Route 20/Lake St	6803

Safety

Needs

The Massachusetts Department of Transportation generates a listing of HSIP eligible Auto, Bike, and Pedestrian clusters for the Commonwealth. A list of HSIP eligible projects for the CMRPC planning region was derived from the statewide list. One hundred and seventy six (176) automobile, six (6) bicycle, and ten (10) pedestrian clusters have been identified as HSIP eligible for the region. (It should be noted that mainline Interstate crash clusters have been removed from consideration due to jurisdictional issues.)

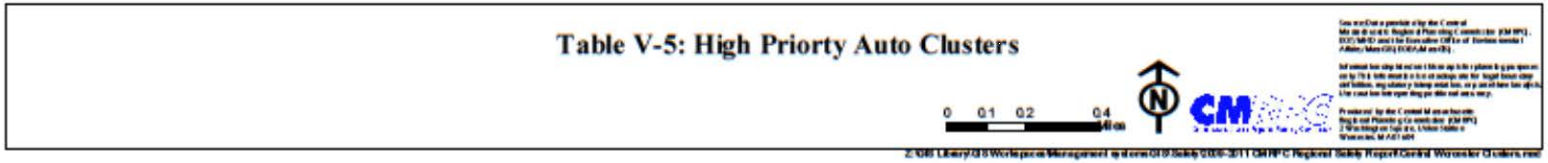
Prioritization

For the purposes of the Long Range Transportation Plan, crashes from the CMRPC region's share of the statewide Top 200 are considered highest priority. These twenty eight (28) locations are provided in Table V-5 on the following page. Additional HSIP eligible crash locations have been identified for the region, and placed in lower tier levels. Please see the *2009-2011 CMRPC Regional Safety Report* for expanded discussion regarding Tiers II & III, as well as other non-HISP eligible crash clusters. With limited funding available, HSIP specific target funds amount to just under $1 million per year, it is important to develop projects that provide the greatest improvement in safety figures. Improving the CMRPC region's share of the statewide Top 200 Automobile clusters will help to work toward achieving the safety related goals laid out in Chapter II of Mobility2040. Since Mobility2040 is a multimodal Long Range Transportation Plan, bicycle and pedestrian HSIP eligible locations have been prioritized in their respective sections. Clusters have been ranked by EPDO, or, Equivalent Property Damage Only (EPDO) index: ▫ Property Damage = 1 Point ▫ Injury = 5 Points ▫ Fatality = 10 Points.

Table V-5

2009-2011 Proposed High Priority Motor Vehicle Clusters in the CMRPC Region (Excludes Interstate Highways)

Crash Count	EPDO	# Fatal	# Injury	# Non-Injury	Town	Statewide Rank	Map Name
90	226	0	34	56	WORCESTER	8	8 CHANDLER STREET - MURRAY AVENUE IN WORCESTER
69	169	0	25	44	WORCESTER	20	20 HIGHLAND STREET - HARVARD STREET IN WORCESTER
82	158	0	19	63	WORCESTER	27	27 PARK AVENUIE - PLEASANT STREET IN WORCESTER
63	155	0	23	40	WORCESTER	28	28 LINCOLN STREET - MARSH AVENUE IN WORCESTER
74	154	0	20	54	SUTTON	30	30 WORCESTER PROVIDENCE TURNPIKE - BOSTON ROAD IN SUTTON
67	139	0	18	49	WORCESTER	44	44 SOUTHBRIDGE STREET - HAMMOND STREET IN WORCESTER
50	134	0	21	29	WORCESTER	54	54 MAIN STREET - PARK AVENUE IN WORCESTER
53	134	1	18	34	WORCESTER	54	54 MAIN STREET - MILL STREET IN WORCESTER
61	129	0	17	44	WORCESTER	60	60 GRAFTON STREET - HAMILTON STREET IN WORCESTER
73	125	0	13	60	WORCESTER	68	68 BELMONT STREET - LINCOLN STREET IN WORCESTER
95	123	0	7	88	NORTHBOROUGH	72	72 WEST MAIN STREET - SOUTH STREET IN NORTHBOROUGH
54	118	0	16	38	WORCESTER	84	84 BELMONT STREET - PLANTATION STREET IN WORCESTER
71	115	0	11	60	SHREWSBURY	89	89 BOSTON TURNPIKE - SOUTH STREET IN SHREWSBURY
67	115	0	12	55	SHREWSBURY	89	89 BOSTON TURNPIKE - SOUTH QUINSIGAMOND AVENUE IN SHREWSBURY
42	114	0	18	24	WORCESTER	93	93 GRAFTON STREET - PLANTATION STREET IN WORCESTER
53	113	0	15	38	WORCESTER	97	97 HIGHLAND STREET - MAIN STREET IN WORCESTER
41	113	0	18	23	WORCESTER	97	97 GRAFTON STREET - MENDON STREET IN WORCESTER
69	109	0	10	59	WORCESTER	110	110 MADISON STREET - GREEN STREET (KELLEY SQUARE) IN WORCESTER
56	108	0	13	43	SHREWSBURY	113	113 HARTFORD TURNPIKE - GRAFTON STREET IN SHREWSBURY
57	105	0	12	45	CHARLTON	126	126 STURBRIDGE ROAD - BROOKFIELD ROAD IN CHARLTON
49	105	0	14	35	WORCESTER	126	126 BELMONT STREET - LAKE AVENUE NORTH IN WORCESTER
51	103	0	13	38	WORCESTER	136	136 LINCOLN STREET - COUNTRY CLUB BOULEVARD IN WORCESTER
53	101	0	12	41	WORCESTER	149	149 HIGHLAND STREET - LANCASTER STREET IN WORCESTER
57	101	0	11	46	WORCESTER	149	149 PARK AVENUE - HIGHLAND STREET IN WORCESTER
44	100	0	14	30	WORCESTER	154	154 PROVIDENCE STREET - MILLBURY STREET IN WORCESTER
53	97	0	11	42	OXFORD	171	171 MAIN STREET - SUTTON AVENUE IN OXFORD
35	96	1	13	21	WORCESTER	179	179 CHANDLER STREET - PIEDMONT STREET IN WORCESTER
37	93	0	14	23	WORCESTER	199	199 MADISON STREET - KELLEY SQUARE (BY ADDRESS) IN WORCESTER



Pavement and State of Good Repair

Needs

In the Central Massachusetts planning region, the largest burden for road maintenance rests with the towns. Funding to maintain these roadways comes primarily through Chapter 90 funding and sometimes through special apportionment through the towns themselves. Some Federal aid eligible town maintained roadways are funded through the TIP every year. CMRPC staff has identified an approximate $10 million annual funding shortfall to maintain the current federal-aid system, as these same resources are stretched to address congestion, safety, and other transportation issues. The towns have the added burden of local roads that are ineligible for federal aid funding. Even with Chapter 90 apportionment, the Massachusetts Highway Association (MHA) identified an approximate $30 million annual funding shortfall for towns to maintain their roadways.

Prioritization

For the purpose of Mobility2040, a list of roadway segments has been prioritized to improve the region's state of good repair. The following list are those segments identified as top regional priorities.

Table V-6: Top Regional Roadway Segment Priorities

City/Town	Route	From	To
Brookfield	Fiskdale Road	Molasses Hill Road	Sturbridge Town Line
Millbury	Greenwood Street	McCracken Road	Elmwood Street
Paxton	Holden Road	Grove Street	Holden Town Line
Southbridge	Hamilton Street	Main Street Loop	Main Street Loop
Spencer	Medow Road	Old Main Street	Dewey Street
Spencer	Charlton Road	Maple Street	Charlton Town Line
Uxbridge	Hartford Avenue East	North Main Street	Granite Street
West Boylston	Laurel Street	Holden Town Line	Hosmer Street
Worcester	Greenwood Street	Blackstone River Road	Route 20
Worcester	Main Street	Chandler Street	Martin Luther King Jr. Boulevard

For additional information please see the *2013 Regional Pavement Management Report and Priority Listing.* Listings of other regional priorities and town priorities can be found in the Technical Appendix.

Intelligent Transportation Systems - Highway

Needs

In 2004, the Executive Office of Transportation-Office of Transportation Planning (now MassDOT) led the effort to develop Central Massachusetts Regional ITS Architecture. This effort was updated in 2010. The four regional needs, unchanged since 2004, were: **congestion management; transit efficiency; efficient use of existing infrastructure; and economic development**. The three major themes for Central Mass region were: **transit demand and revenue; traffic congestion and traveler information** and the **use of ITS data**. From the above mentioned regional needs and major themes came four statewide Near-Term Multi-Agency Initiatives that were recommended by the Guidance Committee for Central Massachusetts. They are:

- **Event Reporting System:** Internet-based tool that serves as a centralized repository for information on events affecting the transportation network.
- **Expansion of the Massachusetts Interagency Video Integration System (MIVIS):** Expansion of video sharing and distribution system to allow sharing of real-time video feeds among a larger group of agencies.
- **511 Travel Information System:** Public travel information system, covering the roadways and transit services in the region.
- **Planning Data Archive:** System for coordinating the planning data archives for the transportation agencies in the region.

These statewide initiatives are largely dependent on MassDOT implementation, and when eventually implemented, will require an expansive effort to involve regional agencies beyond MassDOT to become effective and have a significant effect on regional conditions.

Prioritization

As identified in the 2011 Worcester Regional Mobility Study, Transit Signal Priority (TSP) and Roadway Variable and Dynamic Message Signs (V/DMS) are valuable Intelligent Transportation Systems options for Central Massachusetts' urban core. Both TSP and V/DMS would help reduce vehicle emissions through more efficient bus system operations and added potential for drivers to avoid congested routes thus creating less gridlock for buses that have to travel these routes.

Complete the implementation of the cameras along I-290 and implementation of the RTTMS along this corridor will be the top priority for the Central Massachusetts region. The expansion of the RTTMs along I-495 and Route 146 will also be a priority for the region.

Other regional priorities include working with MassDOT District 3 to identify significant regional projects which affect the commuting traffic during construction to assist with the traffic management plans and identifying locations for placement of message boards regarding construction related delays and detours.

Continue work with the WRTA and the Worcester DPW staff to identify critical intersections and bus routes for Transit Signal Priority implementation in the future.

Expansion of the RTTM technology to include I-395, I-190 and other major state maintained arterials such as Rte 9 and 20 will benefit the region to improve mobility in the future.

Transportation Security

Needs

Some of the needs that were identified by the communities include Opticom[2], bridge repairs, facility repairs, staffing needs, and evacuation route signs that would be needed to affect an orderly evacuation. There is a need for MassDOT to prioritize bridge repair on the primary and secondary evacuation routes.

Local disasters most often identified were train derailment, truck rollover, pipeline explosion or deficient dams. In addition, power plants/transformer stations, waste water treatment or sewage treatment plants, and a few big chemical plants were also identified. The Quabbin and Wachusett reservoirs and aqueduct systems that supply water to Boston area residents and the various reservoirs that supply the City of Worcester were indicated as vulnerable infrastructure. 49 communities have the potential to be directly affected by a train derailment or other railroad accident in their community. Only 19 of the communities are not intersected by MA Routes 2, 9, 20, 146 or Interstates 84, 90, 190, 290, 395, or 495. Every other community sees significant cross state or interstate traffic that has a high potential for truck rollover or other accident that could complicate a regional evacuation.

[2] The Opticom System provides traffic signal priority override for a high level of safe traffic management for emergency vehicles travelling through an intersection.

In addition, the region's communication towers (i.e. summit of Wachusett in Princeton, Ragged Hill in West Brookfield, or Asnebumskit in Paxton) were determined to be important vulnerable infrastructure.

Private emergency communication systems, such as Code Red,[3] are important means of communication with residents in situations such as weather related events or evacuations.

Prioritization

In 2015 staff will continue Phase 2 Evacuation planning efforts. Phase 2 will aid jurisdictions in practical application and use of the "Tool Kit". This will be accomplished through the development and delivery of training workshops and exercises to assure jurisdictions have the knowledge and capabilities to utilize this data during an actual event. Planners will interview municipal and regional stakeholders in advance of the workshops to identify communication concerns. Based on planner/facilitator understanding, workshop agendas will be designed that interactively develop and test a communications protocol between local and regional emergency personnel.

Phase 2 will continue to align the Central Region Homeland Security Advisory Council Evacuation Plan strategies and goals with state evacuation plans. During this phase efforts to identify and resolve conflicting response actions between all stakeholders will be undertaken. Phase 2 will continue to utilize the Evacuation Advisory Council that helped coordinate and facilitate planning efforts in the first two phases of the evacuation planning project.

[3] Code Red is designed to enable local government officials to record, send and track personalized messages to thousands of citizens in minutes. http://www.ecnetwork.com/codered/

Mobility2040 Projects/Initiatives Analysis

Goals/Performance Measures Conformance

Staff developed the list of projects for consideration for the major infrastructure listing by analyzing projects and needs mentioned previously based on cost, effectiveness, readiness, regional significance and community support. The projects were then graded across each of the seven goal areas. If a project met the goal and related performance measures comprehensively it was given a scoring of “XX”, if a project met the goal and related performance measures somewhat it was a given a scoring of “X” and finally if a project did not meet the goal or related performance measures it was not given a score.

The staff presented the scoring of the projects to the CMMPO Advisory Committee members and the committee placed the projects in “tiers” one, two and three. Tier one being the projects that met most of the goals comprehensively and tier three being projects that did not meet certain goal areas. The following table shows the list of projects along with the goal/performance measures grading and finally the tiering of the projects by the committee.

Potential Mobility2040 Major Infrastructure Projects				**Mobility2040:Goals**						
				(X- Meets Goal in Some Areas XX- Meets Goal Comprehensively)						
Tier	**Name**	**Municipality**	**Scope**	Reduce Congestion / Improve Mobility for all Modes	Improve the Safety & Security of the Region	Achieve State of Good Repair	Increase Transportation Options & Promote Healthy Modes	Reduce Greenhouse Gas & Promote Sustainable Practices	Equitable Transportation for all Population	Improve Economic Vitality & Freight Movement
Highway										
*	I-90 (MassPike)/I-495 Interchange	Westborough/Hopkinton	Major Interstate Interchange reconstruction follows removal of toll Barriers	X	XX	X		XX+	X	XX
*	I-495/Rte 9 Interchange	Westborough/Southborough	Major interstate interchange reconstruction on braided ramps with Route 9 improvements. 50 year old bridge structures.	XX	XX	X	XX	XX	X	XX
1	Kelly Square Bypass	Worcester	Utilizes conceptual Winter Street Extension to Madison Street alignment. Reduces overall traffic volumes in Kelly Square. Also reduces truck volumes.	XX	XX	X	XX	X	XX	X
1	I-290/Vernon St/Kelly Square Bridge Expansion	Worcester	Reconstruction & widening of Vernon Street (Route 122A) bridge over I-290 and related ramp work	XX	X	X	X	X	XX	XX
1	Rte 9/ Rte 20 Interchange	Northborough	MassDOT indicates need to replace 1930's bridge structure. Existing ramps replaced by conceptual diamond style geometry.	XX	XX	X		XX	X	xx
1	Rte 146/Rte 20/MassPike Interchange	Millbury	Observed congestion causes operational issues. Investigate improved signals and interchange roadways.	XX	XX	X	X	X	X	XX
2	Route 20	Worcester	Widening to four lane cross section between Massasoit Road and Sunderland Road. Reconstruct Route 20/Route 122 interchange and MBTA bridge over Route 20	X	XX	X	X	X	X	XX
2	Route 20	Charlton/Oxford	Modernization of Route 20 with median barrier and breakdown lanes. Route 20 /Route 56 intersection improvements. Replace bridge over French River and Little River.	X	XX	XX	X	X		X
3	Route 31 Corridor improvements	Holden/Paxton/Spencer	Range of highway improvements in three host communities. Includes bridges, roadway realignment and bike/ped accommodations	X	X	X	X	X	X	X
3	Rte 146/Boston Road Interchange	Sutton	Future year improvement over nearly complete modernized intersection with new ramp in northeast quadrant.	X	XX	X		XX		XX
2	Route 9	West Brookfield	2.1 mile segment of rural highway requires widening by 10' to address safety and accommodate Bicycles and Pedestrians.	X	X	X	X		X	X
3	Frontage Roads on Rte 146	Millbury/Sutton	Construction of frontage roadways from approx. West Main Street to Boston Road. Removes most curbs from Route 146	X	X			X		XX
Bike/Ped										
3	Boston Worcester Air-Line Trail	Shrewsbury/Westborough	Use of former trolley R-O-W for multi-use trail. Connects with Southborough + Framingham. Serves area of high population and employment.	X	X		XX	X	X	X
2	Multimodal Connection: Blackstone River Greenway to Mass-Central Rail Trail	Worcester/W. Boylston/Boylston	Regional connection between two major multimodal trails. Facilitates East Coast Greeway expansion.	X	X		XX	X	X	X
1	Blackstone River Greenway (Segments 3,4 and 5)	Uxbridge, Northbridge, Grafton, Sutton, Millbury	13 miles in length.	X	X		XX	XX	X	
2	Pedestrian Connection: Blackstone River Greenway to Mid-State Trail	Blackstone Valley	Regional pedestrian connection between two major trails. Expands recreational opportunities.	X	X		X	X		

Potential Mobility2040 Major Infrastructure Projects				**Mobility2040:Goals**						
				(X- Meets Goal in Some Areas XX- Meets Goal Comprehensively)						
Tier	**Name**	**Municipality**	**Scope**	Reduce Congestion / Improve Mobility for all Modes	Improve the Safety & Security of the Region	Achieve State of Good Repair	Increase Transportation Options & Promote Healthy Modes	Reduce Greenhouse Gas & Promote Sustainable Practices	Equitable Transportation for all Population	Improve Economic Vitality & Freight Movement
Transit										
1	New fixed route buses	Regionwide	Expansion of the WRTA fixed route fleet.	X	X	XX	XX	XX	XX	XX
1	New fixed route buses	Regionwide	Replacement of the WRTA fixed route fleet.		X	XX	XX	XX	XX	XX
2	Union Station Hub Upgrades/Expansion	Worcester	Future preventative maintenance/potential upgrades or expansion at the WRTA's Union Station Hub	XX		XX	XX	X	XX	X
2	Union Station upgrades	Worcester	Future preventative maintenance/potential upgrades or expansion at Worcester's Union Station	XX		XX	XX	X	XX	X
1	Transit "mini-hubs"	Regionwide	Construct transit "mini-hubs" to provide intermodal connectivity to fixed-route, paratransit, shuttle or rail service within the region	XX			XX	XX	XX	X
3	BRT or "BRT Light" on Main Street (South)	Worcester	Develop a "BRT Light" route on Main Street (South) in Wsorcester between the WRTA Hub through Webster Square	XX			XX	X	XX	X
3	ITS/Transit Signal Priority (TSP)	Regionwide	Install Transit Signal Priority (TSP) infrstructure to signalized intersections within the region	XX		XX		X		
3	M&O Facility Upgrades/Expansion; Possible second facility	Worcester	Future preventative maintenance/potential upgrades or expansion at the WRTA's Maintenance and Operations Facility on Quinsigamond Ave (Adjacent new Railroad track planned by P&W Railroad)			XX				
Rail										
1	Boston-Worcester-Springfield High-Speed Rail passenger service	International, interstate passenger rail connectivity	High Speed Rail Inland Route. Boston-Worcester-Springfield, north to Vermont, Montreal, Quebec.	X		XX	X	XX	XX	X
2	Passenger rail to south: Worcester-New London, CT	Interstate Connectivity	P&W track utilized for future passenger service connecting to Amtrak's North East Corridor Acela service	X		X	XX	X	XX	X
2	Western commuter rail extension Worcester-Springfield	Intercity Connectivity	MBTA Expansion to west with intermediary stations.	X		X	X	XX	XX	X
1	Worcester-Providence passenger service and railroad improvements.	Interstate Connectivity	Potential passenger rail provider envisions using P&W track to institute future service between Worcester and Providence throught the Blackstone Valley.	X		X	X	XX	XX	X
1	MBTA commuter rail station upgrades	Worcester, Grafton, Westborough		X	X	X	X	X	X	
2	CharlieCard Ticket Vending Machines (TVM)	Region					X		X	

Potential Mobility2040 Major Infrastructure Projects				**Mobility2040:Goals**						
				(X- Meets Goal in Some Areas XX- Meets Goal Comprehensively)						
Tier	**Name**	**Municipality**	**Scope**	Reduce Congestion / Improve Mobility for all Modes	Improve the Safety & Security of the Region	Achieve State of Good Repair	Increase Transportation Options & Promote Healthy Modes	Reduce Greenhouse Gas & Promote Sustainable Practices	Equitable Transportation for all Population	Improve Economic Vitality & Freight Movement
Freight										
1	Providence & Worcester Railroad	Worcester	Bridge over Southbridge Street	X	X	XX				X
1	Grafton & Upton Railroad	Hopedale	At-grade highway crossing improvements	X	XX	X				X
2	NB RR	East Brookfield, North Brookfield	Private revitalization effort.		XX	X				X
1	Providence & Worcester Railroad	Blackstone, Millbury, Millville, Sutton, Uxbridge	5 major bridges in the BRV			XX				XX
1	EB & S Railroad	East Brookfield, Spencer	Various expansion and IRAP track improvements for improved operations.		X	X		X		X
1	Providence & Worcester Railroad	Worcester	IRAP track improvements		X	X		X		X
2	MassCentral Railroad	Hardwick, Barre	Track maintenance and improvement (R-O-W largely owned by Commonwealth)			X				X

Major Infrastructure Projects and Initiatives

The Major Infrastructure project list for the Bicycle and Pedestrian, Commuter rail and Freight areas was compiled based on the tiering of projects by the CMMPO Advisory Committee. The major infrastructure projects that were identified as part of this plan for the above mentioned areas were all Tier 1 projects. This list was financially constrained since the initiatives will be undertaken through annual work program elements by staff in the upcoming years or the projects have private/state funding as the primary funding source.

Table V-8: List of Major Infrastructure Projects Included in Mobility2040

Bicycle and Pedestrian Projects/Initiatives

Recommended Implementation Schedule	Project	Project Scope	Project/Initiative
2015-2020	Boston Worcester Air-Line Trail	TIP or TAP funding ($500k)	Project
2015-2020	Blackstone Rive Greenway (Segments 3,4 and 5)	Staff will pursue an Initiative to collaborate with the lead agency to identify segments, establish costs for each segment and project scope	Initiative
2020-2025	Multimodal Connection: Blackstone River Greenway to Mass-Central Rail Trail	Staff will pursue an Initiative to collaborate with the lead agency to establish costs and project scope	Initiative
2020-2025	Pedestrian Connection: Blackstone River Greenway to Mid-State Trail	Staff will pursue an Initiative to collaborate with the lead agency to establish costs and project scope	Initiative

Commuter Rail Projects/Initiatives

Recommended Implementation Schedule	Project	Project Scope
2020-2025	Worcester-Providence passenger service and railroad improvements	Private Railroad operations and funding
2015-2040	MBTA commuter rail station upgrades	MBTA funding

Freight Rail Projects/Initiatives

Recommended Implementation Schedule	Project	Project Scope
2015-2020	Grafton & Upton Railroad	At-grade highway crossing improvements (Private funding)
2020-2025	Providence & Worcester Railroad	Bridge over Southbridge Street (Private funding)
2015-2040	EB & S Railroad	Various expansion and IRAP track improvements for improved operations (Private funding)
2015-2040	Providence & Worcester Railroad	IRAP track improvements (Private funding)

There were two transit projects that were identified as major infrastructure projects. These two projects were Tier one projects by the MPO Advisory Committee. The two projects were "new fixed route buses" and "transit mini-hubs". Based on input provided by WRTA on the feasibility and funding availability the two projects mentioned above were listed as transit major infrastructure projects that would be financially constrained.

Table V-9: List of Major Infrastructure Transit Projects Included in Mobility2040

Recommended Implementation Schedule	Project	Project Scope
2015-2020	Route 43 - New route connecting Webster, Dudley, Southbridge, and Sturbridge	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2015-2020	Route 32 - New route to connect Holden with Worcester.	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2020-2025	Route 17 - New route to connect Westborough Office Park, Solomon Pond Mall, and Northborough Crossing (Wegman's).	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2020-2025	Route 44 - Proposed new route to connect colleges: - Becker, WPI, Assumption, WSU, Clark, Holy Corss, Quinsigamond CC	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2015-2040	New fixed route buses	Replacement or expansion of the WRTA fixed route fleet.

The CMMPO agreed to the Major Infrastructure projects and initiatives recommendation for Bicycle and Pedestrian, Transit, Commuter Rail and Freight areas.

Highway Project Options

Staff presented three financially constrained highway project options to the CMMPO based on projects that were ranking in Tier 1 or 2, project costs, work completed so far, previous studies and staff input. Given the tight funding constraints and the magnitude of projects, staff had assumed that the I495/Masspike interchange modifications and I495/Rte 9 interchange projects will be funding through other state funding mechanisms. These two projects have studies completed and are not just regional high priorities but MassDOT priorities as well. Staff hopes that these projects will be listed under the statewide plan within the next few years. Hence the above mentioned projects were included in the all the options presented below.

Table V-10: List of Options for Major Infrastructure Highway Projects

Recommended Implementation Schedule	Option 1	Option 2	Option 3
2015-2020	Route 9 - West Brookfield **OR** No MI project	Route 9 - West Brookfield **OR** No MI project	Route 9 - West Brookfield **OR** No MI project
2021-2025	Route 9/20 Interchange - Northborough	Route 20 widening between Massasoit Rd and Sunderland Rd - Worcester	Route 20 modernization with Median barriers and Intersection improvements - Charlton/Oxford
2026-2030	I-290/Vernon St/Kelly Square Bridge Expansion - Worcester	Route 9/20 Interchange - Northborough	Route 20 widening between Massasoit Rd and Sunderland Rd - Worcester
2031-2035	Route 146/20/MassPike Interchange - Millbury	I-290/Vernon St/Kelly Square Bridge Expansion - Worcester	Route 9/20 Interchange - Northborough
2036-2040	Kelly Square Bypass - Worcester	Route 146/20/MassPike Interchange - Millbury	I-290/Vernon St/Kelly Square Bridge Expansion - Worcester

Note: It is currently assumed that implementation of the following projects will be pursued using primarily State controlled funding sources

- ***I - 90 (MassPike)/I - 495 Interchange: Major reconstruction follows removal of tolls (Westborough/Hopinkton)***
- ***I - 495/Route 9 Interchange: Major reconstruction on braided ramps with Route 9 improvements (Westborough/Southborough)***

Under the Highway project options the CMMPO decided to expand the three options to five options for analysis. Option 1 and 2 would be analyzed with and without the Route 9 – West Brookfield project in the Years 2015-20120 and Option 3 would be analyzed without the West Brookfield project.

Staff performed various analyses using the travel demand model to analyze the congestion and vehicle miles travelled reductions, GreenHouse Gas impact analysis, Environmental Justice benefits and burdens analysis, Geographic Equity Analysis and Public Input on the presented options. Also the transit projects were included as part of the analysis to capture the maximum extent of the impact of each of the options in a multi-modal way.

The five options that were analyzed are shown below in Table V-11. Please note projects highlighted in grey are the same in all the options presented.

Table V-11: Major Infrastructure Project Options for Analysis

Recommended Implementation Schedule	Option 1	Option 1A	Option 2	Option 2A	Option 3
2015-2020	I495/Rte 9 Interchange Improvments	I495/Rte 9 Interchange Improvments	I495/Rte 9 Interchange Improvments	I495/Rte 9 Interchange Improvments	I495/Rte 9 Interchange Improvments
2021-2025	I495/Masspike Interchange Improvements	I495/Masspike Interchange Improvements	I495/Masspike Interchange Improvements	I495/Masspike Interchange Improvements	I495/Masspike Interchange Improvements
2015-2020	WRTA Route 43 - New route connecting Webster, Dudley, Southbridge and Sturbridge	WRTA Route 43 - New route connecting Webster, Dudley, Southbridge and Sturbridge	WRTA Route 43 - New route connecting Webster, Dudley, Southbridge and Sturbridge	WRTA Route 43 - New route connecting Webster, Dudley, Southbridge and Sturbridge	WRTA Route 43 - New route connecting Webster, Dudley, Southbridge and Sturbridge
2015-2020	WRTA Route 32 - New route to connect Holden with Worcester	WRTA Route 32 - New route to connect Holden with Worcester	WRTA Route 32 - New route to connect Holden with Worcester	WRTA Route 32 - New route to connect Holden with Worcester	WRTA Route 32 - New route to connect Holden with Worcester
2021 - 2025	WRTA Route 17 - New route to connect Westborough Office park, Solomon Pond Mall, and Northborough crossing	WRTA Route 17 - New route to connect Westborough Office park, Solomon Pond Mall, and Northborough crossing	WRTA Route 17 - New route to connect Westborough Office park, Solomon Pond Mall, and Northborough crossing	WRTA Route 17 - New route to connect Westborough Office park, Solomon Pond Mall, and Northborough crossing	WRTA Route 17 - New route to connect Westborough Office park, Solomon Pond Mall, and Northborough crossing
2021-2025	WRTA Route 44 - Proposed new routes to connect colleges - Becker, WPI, Assumption, WSU, Clark, Holy Cross, Quinsigamond CC	WRTA Route 44 - Proposed new routes to connect colleges - Becker, WPI, Assumption, WSU, Clark, Holy Cross, Quinsigamond CC	WRTA Route 44 - Proposed new routes to connect colleges - Becker, WPI, Assumption, WSU, Clark, Holy Cross, Quinsigamond CC	WRTA Route 44 - Proposed new routes to connect colleges - Becker, WPI, Assumption, WSU, Clark, Holy Cross, Quinsigamond CC	WRTA Route 44 - Proposed new routes to connect colleges - Becker, WPI, Assumption, WSU, Clark, Holy Cross, Quinsigamond CC
2015-2020	Route 9 - West Brookfield		Route 9 - West Brookfield		
2021-2025	Route 9/20 Interchange - Northborough	Route 9/20 Interchange - Northborough	Route 20 widening between Massasoit Rd and Sunderland Rd - Worcester	Route 20 widening between Massasoit Rd and Sunderland Rd - Worcester	Route 20 modernization with Median barriers and Intersection improvements - Charlton/Oxford
2026-2030	I-290/Vernon St/Kelly Square Bridge Expansion - Worcester	I-290/Vernon St/Kelly Square Bridge Expansion - Worcester	Route 9/20 Interchange - Northborough	Route 9/20 Interchange - Northborough	Route 20 widening between Massasoit Rd and Sunderland Rd - Worcester
2031-2035	Route 146/20/MassPike Interchange - Millbury	Route 146/20/MassPike Interchange - Millbury	I-290/Vernon St/Kelly Square Bridge Expansion - Worcester	I-290/Vernon St/Kelly Square Bridge Expansion - Worcester	Route 9/20 Interchange - Northborough
2036-2040	Kelly Square Bypass - Worcester	Kelly Square Bypass - Worcester	Route 146/20/MassPike Interchange - Millbury	Route 146/20/MassPike Interchange - Millbury	I-290/Vernon St/Kelly Square Bridge Expansion - Worcester

Highway Project Analysis

Introduction

The Victoria Transport Policy Institute defines Equity as "the distribution of impacts (benefits, disadvantages and costs) and whether that distribution is considered fair and appropriate." Current regulations mandate different types of analysis in order to prevent foreseeable impacts to the population as a result of a transportation project. Equity principles permeate in transportation planning when the analyses include possible impacts to disadvantage populations and measures to avoid, minimize or mitigate such impacts. Mobility2040 incorporates equity in the Central Massachusetts long range transportation planning process by measuring different facets of equity according to federal provisions and planning emphasis areas for each of the options for major infrastructure projects.

CMMPO staff analyzed primarily the five highway options for major infrastructure projects. Other major infrastructure projects, as explained before, are considered initiatives at this point (bicycle and pedestrian projects), the CMMPO does not vote on particular projects (rail) or wouldbe funded with state funds (MBTA). In the case of transit projects, the findings from the Comprehensive Service Analysis (CSA) were used as supplemental information. The CSA analyzed transit travel demand based on accessibility to jobs, population density, priority development areas, zero-vehicle households, low-income population and minority areas (See the Technical Appendix for more details). As a result, only the five options for roadway major infrastructure projects were analyzed using multiple equity criteria, including geographic equity analysis, demographic analysis, benefits and burdens analysis, public input and possible impacts from greenhouse gases (GHG). A detailed discussion follows.

Geographic Equity

Geographic equity, in this case, refers to the equal distribution of projects among the six CMMPO subregions. The measure used for this analysis was the number or percentage of major infrastructure projects in each subregion. Option 1 and Option 2, both has one project in each subregion (6 of 6), whereas Option 1A and Option 2A only has projects in five of the six subregions. Option 3 has the least with projects in only four of the six subregions.

Environmental Justice and Other Vulnerable Population

Environmental Justice is the ***fair treatment*** and ***meaningful involvement*** of all people regardless of race, color, national origin, or income with respect to the development, implementation, and

enforcement of environmental laws, regulations, and policies (Executive Order I2898 – February 1994). The principles include the following: 1) to ensure the full and fair participation process; 2) to avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects; and 3) to prevent the denial of, reduction in, or significant delay in the receipt of benefits.

As such, the environmental justice populations include minority and low income populations. It is the CMMPO's role to identify environmental justice populations' needs and make the necessary efforts to engage them so that they are part of the decision-making process.

In October 2013, the CMMPO updated and approved the current Environmental Justice (EJ) definition to reflect regional characteristics and demographic changes. The CMMPO used data from the 2010 U.S. Census and the 2010 5-year American Community Survey (ACS) data. The CMMPO Environmental Justice definition reads as following:

A U.S. Census Block Group will be denominated as a "Neighborhood of Environmental Justice Concern" (NEJC) if complies with any of the following criteria:

Low income population – Block Groups (2010 ACS) where the median household income is less than or equal to 65% of the regional median (65% * $77,323 = $50,259).

Minority population – Block Groups where the percentage of minority population is greater than or equal to the regional proportion of minority population, 20.3%.

Likewise, the CMMPO identifies other vulnerable populations as a means to expand project outreach activities and identify possible mitigation efforts. Still, the CMMPO reassures its intention to be flexible adding more criteria if necessary, depending on projects' characteristics or local knowledge of a given location. The thresholds for other vulnerable population were set at 150% of region's average. This allows the identification of areas with thresholds above the average and to be inclusive, but discrete based in resources available. Other vulnerable populations include the following:

Zero Vehicle Household – Refers to the occupied housing units (owner or renter occupied) without a vehicle available. In the CMMPO region 8.5% of all occupied housing units don't have a vehicle available. A Census Block Group is considered an NEJC if the proportion is equal or greater than 12.75% (150% higher than the region's).

Linguistically Isolated Household – Is a household in which all members 14 years old and over speak a non-English language and also speak English less than ‘‘very well.’’ No one 14 years old or older speaks only English. In the CMMPO region, 6.3% of all households are linguistically isolated. A Census Block Group is considered an NEJC if the proportion is equal or greater than 9.45% (150% higher than the region’s).

Elderly Population – For the CMMPO, an elderly population refers to those households in the region that have one or more persons 75 years of age or older. In the region, 12.5% of all households have at least one person 75 years age or older. A Census Block Group is considered an NEJC if the proportion is equal or greater than 18.8% (150% higher than the region’s).

Hispanic or Latino population – Refers to people who reported Hispanic, Latino or Spaniard origin regardless of race. In the CMMPO region 9.36% reported some type of Hispanic origin. A Census Block Group is considered an NEJC if the proportion is equal or greater than 14.0% (150% higher than the region’s).

For Mobility2040, the CMMPO Environmental Justice definition was used to determine the possible impacts on the population for all the options for Major Infrastructure Projects. For this purpose, staff used Geographic Information Systems (GIS) to view and tabulate demographic information. The unit of geographic analysis used was Census Block Groups in conformity with the CMMPO definition of NEJC. These maps are a valuable visualization tool used to depict the proposed Major Infrastructure projects in relation to the region’s NEJC. Also, the maps include all mappable projects. Projects such as bridges or intersections were mapped as points, whereas other road-related projects were mapped as lines. A one-mile radii buffer was done for each the features. If the project’s buffer intersects a block group with either low-income population, minority population or other vulnerable populations, the project was considered to be located in a NEJC area for the purpose of this analysis. (See Figure V-3)

Table V-12 shows that all major infrastructure projects included in the five options impact a vulnerable population within a Neighborhood of Environmental Justice Concern (NEJC). With the exception of the US-20 improvement project in the towns of Charlton and Oxford, all projects are located within one mile from a minority or low income NEJC. In addition, the projects in Kelley Square, both the MA-122 bypass and the bridge expansion over I-290, show a very diverse environmental justice population composition within the one-mile buffer zone.

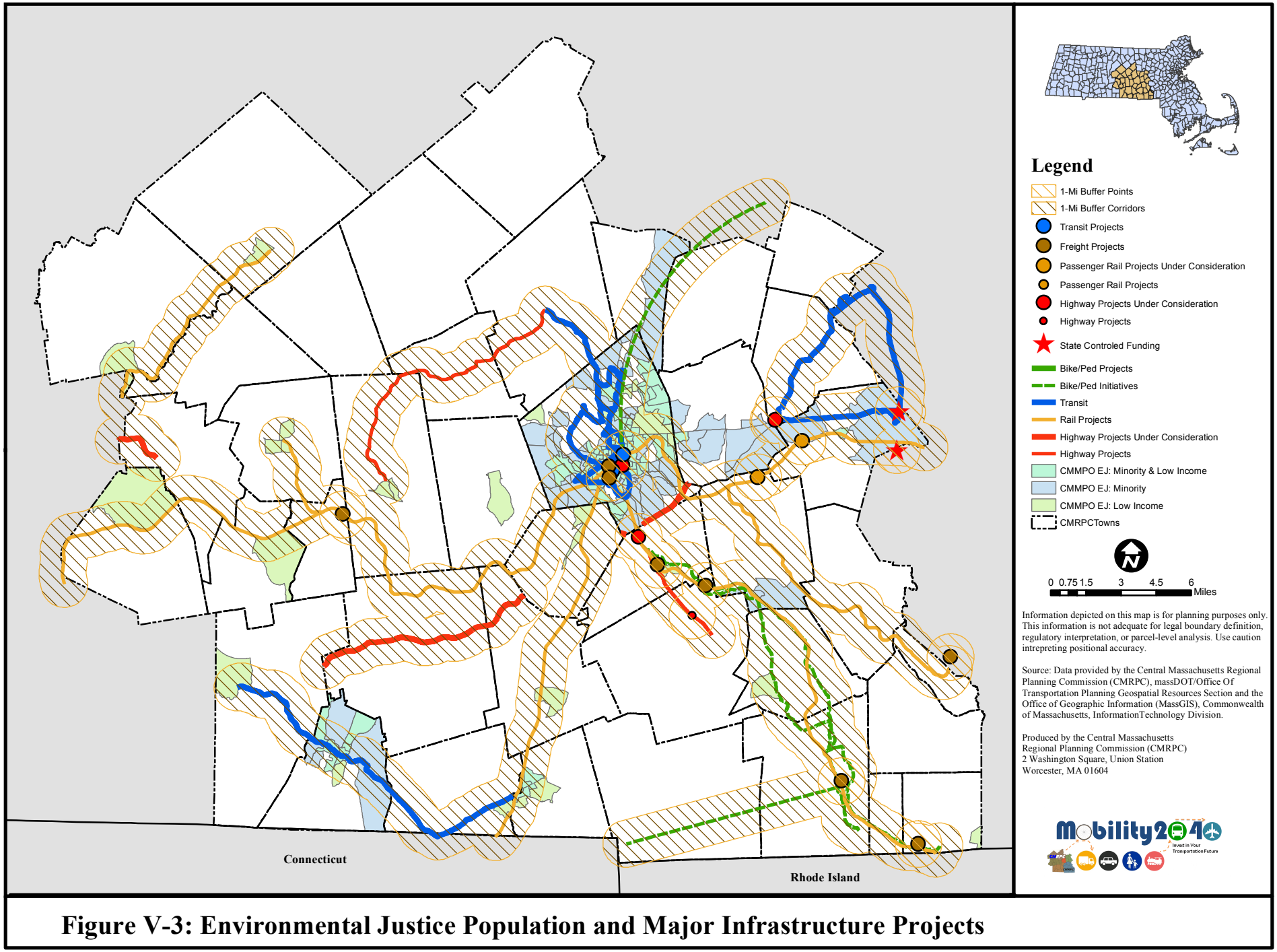
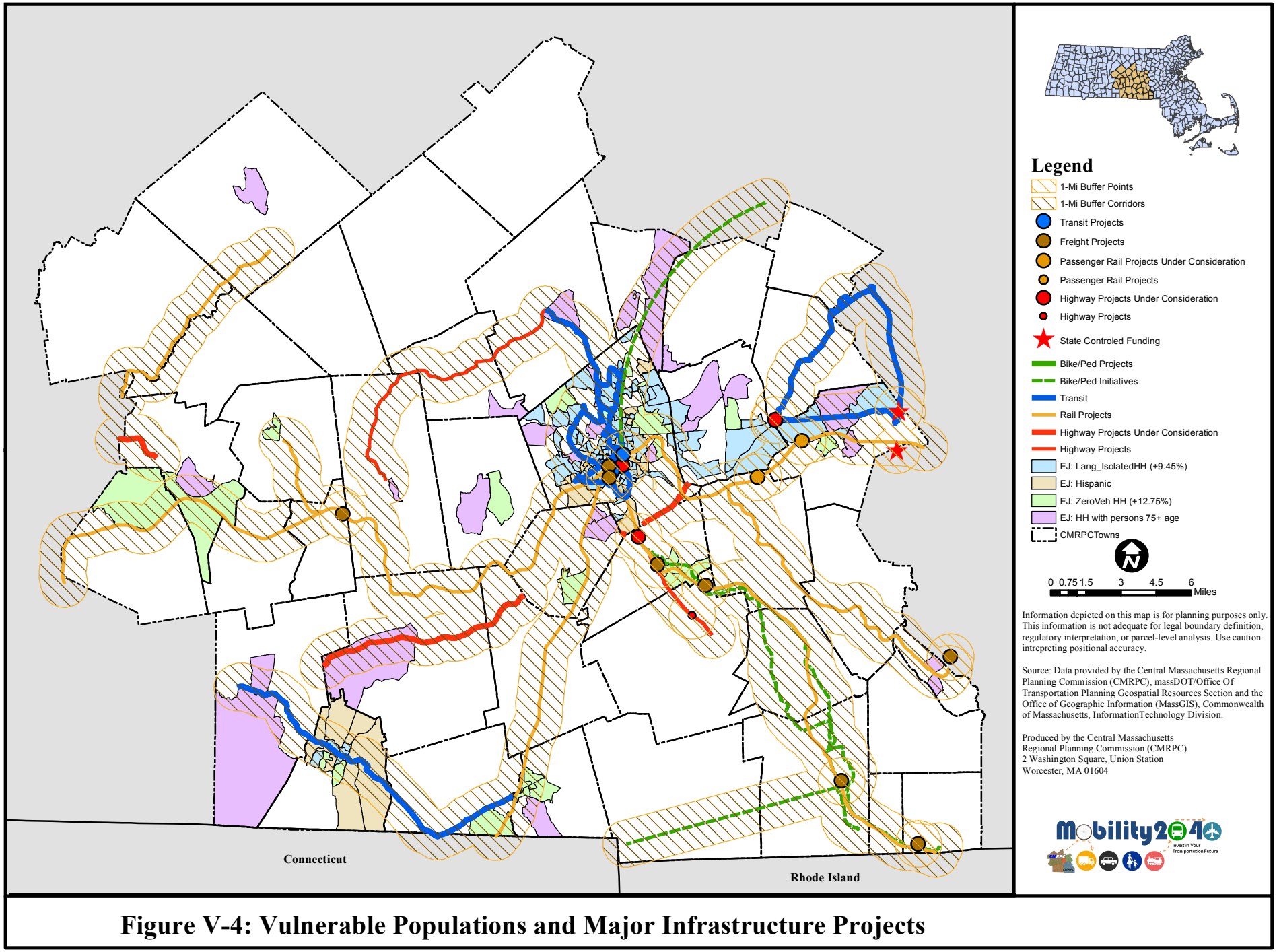

Legend
1-Mi Buffer Points
1-Mi Buffer Corridors
Transit Projects
Freight Projects
Passenger Rail Projects Under Consideration
Passenger Rail Projects
Highway Projects Under Consideration
Highway Projects
State Controled Funding
Bike/Ped Projects
Bike/Ped Initiatives
Transit
Rail Projects
Highway Projects Under Consideration
Highway Projects
CMMPO EJ: Minority & Low Income
CMMPO EJ: Minority
CMMPO EJ: Low Income
CMRPCTowns
0 0.75 1.5 3 4.5 6
Miles
Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution intrepreting positional accuracy.
Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT/Office Of Transportation Planning Geospatial Resources Section and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, InformationTechnology Division.
Produced by the Central Massachusetts Regional Planning Commission (CMRPC)
2 Washington Square, Union Station
Worcester, MA 01604
Mobility2040
Invest in Your Transportation Future
Connecticut
Rhode Island

Figure V-3: Environmental Justice Population and Major Infrastructure Projects


Legend
1-Mi Buffer Points
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Transit Projects
Freight Projects
Passenger Rail Projects Under Consideration
Passenger Rail Projects
Highway Projects Under Consideration
Highway Projects
State Controled Funding
Bike/Ped Projects
Bike/Ped Initiatives
Transit
Rail Projects
Highway Projects Under Consideration
Highway Projects
EJ: Lang_IsolatedHH (+9.45%)
EJ: Hispanic
EJ: ZeroVeh HH (+12.75%)
EJ: HH with persons 75+ age
CMRPCTowns
0 0.75 1.5 3 4.5 6
Miles
Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution intrepreting positional accuracy.
Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT/Office Of Transportation Planning Geospatial Resources Section and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, InformationTechnology Division.
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Figure V-4: Vulnerable Populations and Major Infrastructure Projects

This initial analysis make planners aware of the need to tailor outreach activities for each one of these major infrastructure projects according to the populations identified in this buffer zone. As projects move forward to the design phase, the analysis become more refined and will allow the identification and engagement of other vulnerable populations not initially identified.

Table V-12: Environmental Justice Criteria by Major Infrastructure Highway Project

	Kelley Square Bypass (MA-122)	& I-290 Interchange (Kelley Square and Vernon Street)	US-20 (Worcester)	I-90 / MA-146 / US-20 Interchange (Millbury)	MA-9 (West Brookfield)	US-20 / MA-9 Interchange (Northborough)	US-20 (Charlton/Oxford)
Minority Population	✓	✓	✓	✓		✓	
Low Income	✓	✓	✓		✓		
Zero Vehicle Household	✓	✓	✓	✓	✓		
Linguistically Isolated Household	✓	✓	✓			✓	
Households with people 75 years or older	✓	✓	✓				✓
Hispanic or Latino	✓	✓		✓			

It is important to note that these criteria does not determine the feasibility or desirability of a project more than other, it is only a method to know at early planning stages if a transportation project will likely impact environmental justice populations. This method makes transportation planners aware of the need to avoid such impacts, minimize or to mitigate any foreseeable impacts. Also, it is an initial tool that assists future outreach efforts. These efforts need to be refined as the planning process and future implementation develops. In addition, environmental effects of projects proposed for Federal funding must comply with the National Environmental Policy Act (NEPA) process. The NEPA review is a more detailed assessment on the potential human or natural environmental effects. The NEPA assessment includes human health, economic and social effects on minority and low-income populations.

Benefits and Burdens Analysis

A Benefits and Burdens Analysis is "an evaluation comparing impacts likely to be experienced by EJ populations against those likely to be experienced by non-EJ populations and the community as a whole in order to address any disproportionate benefits or burdens between EJ populations and the population at large." (FTA C 4703.1, August 15, 2012) It is important to note that there's no one-size-fits-all type of approach to determine benefits or disproportionate burdens from transportation projects; but it is important to recognize and base the analysis on local characteristics.

For Mobility2040, outputs from the Travel Demand Model were used to measure the change in vehicles mile traveled (VMT) in environmental justice areas (EJ areas) and non-environmental justice areas (non-EJ areas). For this purpose, the CMMPO considered two main scenarios, the No-Build Scenario against Current Conditions and the Build Scenario against Current Conditions. The Build Scenario included the five options already mentioned.

Scenario 1

Current Conditions (2010) versus No Build Scenario by 2040

The 2010 Base Scenario for the CMMPO region show a total of 19,171,695 vehicle miles traveled (VMT), of which 15,818,236 of total VMT are in non-EJ areas, whereas 5,472,875 will occur in EJ areas. The percent of increase of VMT by 2040 in the No-Build scenario was 11.1%. The percent of increase in non-EJ areas was 10.7%, and in EJ areas, 12.2%. See Table V-XX for more details.

Scenario 2

Current Conditions (2010) versus Build Major Infrastructure by 2040

By 2040, the VMT increases will be lower in each one of the five options when compared to the No-Build scenario. In average, the build options will account for 21,217,431 VMT, of which 15,770,182 will occur in non-EJ areas and 5,447,249 in EJ areas. The percent of increase of VMT by 2040 in the Build scenario (average of the five options) was 10.7%. The percent of increase in non-EJ areas was 10.3%, and in EJ areas, 11.7%.

Table V-13: VMT in EJ and non-EJ areas

	Non-EJ Areas		EJ Areas		Total	
	VMT	% increase by 2040	VMT	% increase by 2040	VMT	% increase by 2040
Base 2010	***14,295,512***		***4,876,183***		***19,171,695***	
No Build Scenario	***15,818,236***	***10.7%***	***5,472,875***	***12.2%***	***21,291,110***	***11.1%***
Average Build Options	***15,770,182***	***10.3%***	***5,447,249***	***11.7%***	***21,217,431***	***10.7%***
Option 1	15,779,418	10.4%	5,445,203	11.7%	21,224,621	10.7%
Option 1A	15,778,559	10.4%	5,445,685	11.7%	21,224,244	10.7%
Option 2	15,772,948	10.3%	5,450,723	11.8%	21,223,672	10.7%
Option 2A	15,772,467	10.3%	5,449,260	11.8%	21,221,728	10.7%
Option 3	15,747,518	10.2%	5,445,371	11.7%	21,192,889	10.5%

VMT data from the travel demand model was aggregated by options and by town. As a result, EJ areas in some towns will experiment a higher increase in VMT depending on the option. See Table V-14 for a summary by town.

In summary, by 2040 there will be an increase in VMT across the region. Overall, this increase in vehicle miles traveled will be higher in EJ areas, with specific variances by town. Nonetheless, if none of the options are built by 2040, the VMT will be even higher and the impact in EJ areas will be even higher than in any of the build options.

If ranked by the option with the lowest VMT in EJ areas, Option 1 ranked the highest, followed by Option 3. Option 2 ranked the lowest because it has the higher amount of VMT in EJ areas. See Table V-15 on the following page for more details.

Table V-14: VMT Percent of Increase by 2040 in EJ and non-EJ areas by Town

	Percent of increase in VMT in Non-EJ Areas						Percent of increase in VMT in EJ Areas					
	No build Scenario	Option 1	Option 1A	Option 2	Option 2A	Option 3	No build Scenario	Option 1	Option 1A	Option 2	Option 2A	Option 3
CMMPO Region	**10.7%**	**10.4%**	**10.4%**	**10.3%**	**10.3%**	**10.2%**	**12.2%**	**11.7%**	**11.7%**	**11.8%**	**11.8%**	**11.7%**
AUBURN	2.7%	2.3%	2.3%	2.3%	2.3%	2.3%	8.0%	6.7%	6.7%	6.9%	6.8%	7.1%
BARRE	-4.4%	-4.7%	-4.7%	-4.8%	-4.8%	-4.8%	-6.8%	-7.5%	-7.5%	-7.5%	-7.5%	-7.5%
BERLIN	4.5%	4.6%	4.7%	4.7%	4.8%	4.7%						
BLACKSTONE	15.9%	15.8%	15.8%	15.8%	15.8%	15.8%	22.4%	25.1%	25.1%	24.7%	25.1%	25.1%
BOYLSTON	9.9%	10.5%	10.3%	10.3%	10.4%	10.1%						
BROOKFIELD	6.4%	6.2%	6.2%	6.3%	6.2%	6.2%	9.2%	9.1%	9.1%	9.2%	9.2%	9.5%
CHARLTON	4.1%	3.5%	3.5%	3.5%	3.5%	3.6%						
DOUGLAS	15.3%	14.7%	14.7%	14.8%	14.7%	14.4%						
DUDLEY	3.3%	3.4%	3.4%	3.4%	3.4%	3.4%	8.4%	8.2%	8.2%	8.2%	8.2%	8.2%
EAST BROOKFIELD	4.7%	4.6%	4.5%	4.6%	4.6%	4.6%						
GRAFTON	14.0%	12.3%	12.3%	12.0%	12.0%	11.6%	43.6%	42.5%	42.5%	43.1%	43.0%	42.1%
HARDWICK	4.7%	3.7%	3.7%	3.7%	3.7%	3.8%	8.9%	7.9%	7.9%	7.8%	7.9%	8.1%
HOLDEN	-0.5%	-0.7%	-0.7%	-0.6%	-0.7%	-0.5%						
HOPEDALE	4.7%	4.9%	4.9%	4.6%	4.7%	4.8%						
LEICESTER	0.9%	0.6%	0.6%	0.6%	0.6%	0.6%	-0.7%	-1.0%	-1.0%	-1.0%	-1.1%	-1.0%
MENDON	9.1%	10.2%	10.2%	9.9%	10.0%	9.5%						
MILLBURY	11.7%	11.4%	11.4%	11.3%	11.3%	10.3%	39.9%	38.3%	38.3%	38.2%	38.1%	38.1%
MILLVILLE	13.1%	11.8%	11.8%	11.7%	11.7%	11.8%						
NEW BRAINTREE	0.1%	0.0%	0.1%	-0.1%	0.0%	0.2%						
NORTH BROOKFIELD	-0.2%	-0.2%	-0.1%	-0.2%	-0.1%	-0.1%	-2.1%	-2.1%	-2.1%	-2.1%	-2.1%	-2.1%
NORTHBOROUGH	15.1%	15.0%	15.1%	15.1%	15.0%	15.0%						
NORTHBRIDGE	24.2%	24.4%	24.3%	24.0%	23.9%	22.2%	24.1%	24.1%	24.1%	24.2%	24.1%	23.6%
OAKHAM	4.1%	3.9%	4.0%	3.8%	3.9%	4.0%						
OXFORD	4.4%	4.2%	4.2%	4.2%	4.2%	4.3%	7.0%	6.7%	6.7%	6.7%	6.7%	6.8%
PAXTON	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%						
PRINCETON	1.3%	1.1%	1.1%	1.1%	1.1%	1.1%						
RUTLAND	-1.2%	-1.2%	-1.2%	-1.2%	-1.2%	-1.2%						
SHREWSBURY	15.2%	15.0%	15.0%	15.1%	15.1%	15.2%	17.8%	18.0%	18.0%	18.3%	18.2%	18.5%
SOUTHBRIDGE	3.2%	3.1%	3.1%	3.1%	3.1%	3.4%	7.1%	6.8%	6.8%	6.8%	6.8%	6.8%
SPENCER	0.9%	0.8%	0.8%	0.8%	0.8%	0.8%	2.6%	2.4%	2.4%	2.4%	2.4%	2.4%
STURBRIDGE	5.3%	5.2%	5.2%	5.2%	5.2%	5.2%	5.6%	5.8%	5.8%	5.8%	5.8%	5.7%
SUTTON	37.9%	37.8%	37.8%	37.9%	37.8%	37.1%						
UPTON	42.8%	43.1%	43.1%	42.9%	43.0%	41.6%						
UXBRIDGE	29.7%	29.7%	29.7%	29.8%	29.6%	29.2%						
WARREN	4.9%	5.0%	5.0%	5.0%	5.0%	5.0%	3.9%	3.9%	4.0%	3.9%	4.0%	4.1%
WEBSTER	11.4%	11.2%	11.2%	11.2%	11.2%	11.4%	10.4%	10.3%	10.3%	10.2%	10.2%	10.4%
WEST BOYLSTON	-0.6%	-1.0%	-0.9%	-0.8%	-0.9%	-0.8%	6.1%	5.7%	5.8%	6.1%	6.2%	5.8%
WEST BROOKFIELD	11.2%	11.0%	10.9%	11.1%	11.0%	11.0%						
WESTBOROUGH	34.8%	33.7%	33.6%	33.3%	33.4%	33.5%	29.0%	27.6%	27.6%	27.9%	27.9%	27.3%
WORCESTER	3.6%	3.3%	3.3%	3.5%	3.5%	3.4%	8.3%	7.8%	7.8%	7.8%	7.8%	7.7%

Table V-15: Ranking of Options based on Lower VMT in EJ areas

Rank	Options	Non-EJ Areas	EJ Areas	Total
1	Option 1	15,779,418	5,445,203	21,224,621
2	Option 3	15,747,518	5,445,371	21,192,889
3	Option 1A	15,778,559	5,445,685	21,224,244
4	Option 2A	15,772,467	5,449,260	21,221,728
5	Option 2	15,772,948	5,450,723	21,223,672

Greenhouse Gas (GHG) Savings

Throughout the development of Mobility2040, the CMMPO has tracked regional progress towards GHG emission reductions. As the regional travel demand model has yet to provide quantitative data for this purpose, the CMMPO staff has provided a qualitative assessment concerning the anticipated impacts of selected Major Infrastructure projects. All LRTP Major Infrastructure projects have been assessed as to whether those selected will have a maximum, moderate or minimal/insignificant impact on the potential reduction of GHG in the regional air shed.

The results of this multimodal analysis fed directly into the Major Infrastructure project options selected by the MPO within the financial constraints of anticipated future year funding. Further, a cumulative qualitative assessment has been provided at this time that shows that the projects selected by the MPO will have an overall "moderate" positive impact on reducing GHG within the planning region. Accordingly, throughout the development process of Mobility2040, the MPO has made efforts to minimize GHG emissions and impacts.

Further, when engaging the public throughout the development of the LRTP, the MPO staff highlighted GHG as a byproduct of the transportation system and made efforts to gain feedback on how to advance projects and strategies within the region on how to reduce GHGs. In particular, an annual "Environmental Consultation Session" was held in April 2015 for both "Mobility 2040" and the under development 2016-2019 TIP. The meeting agenda covered GHG topics that included the state's GWSA, the Clean Energy & Climate Plan, measurable GHG reduction potential, as well as associated adverse effects to public health. At the session, the planning staff stated that the projects in both the CMMPO LRTP and TIP were selected in full consideration of likely GHG impacts, among other performance-based project selection criteria. Based on the staff's qualitative analysis the overall benefit for each of the options was "moderate". The only project that would bring in huge amounts of GHG savings is the I-495/ Masspike Interchange project. Other projects have some moderate or minimal GHG savings.

Public Input

The intent of the Mobility 2040 Funding and Major Infrastructure survey was to garner public input for their preference of options regarding transportation funding scenarios and determine options for Major Infrastructure projects. The second question asked respondents to select one of

the Major Infrastructure roadway project options, in five-year bands, to be included in the plan. 45 of 77 respondents (59%) selected project Option 1, 14 of 77 respondents (18%) selected project Option 2, and 18 of 77 respondents (23%) selected project Option 3.

Travel Demand Modeling Analysis

The travel demand model was used to analyze all the five project options to understand the benefits of each of the options in terms of reduction in congestion and savings in vehicle miles travelled. The 2010 model was run to understand the current conditions. There was a model run for the year 2040 with no major infrastructure projects to understand the impact of landuse change. The 2040 No-Build scenario estimated a total of 38.3 miles of congested roadways and 21,291,110 vehicle miles travelled. Each of the project option was compared to the No-build scenario to calculate the net benefit of the option. Staff compared congestion locations for each of the options and again the only projects that had major congestion relief was the I495/Masspike and I495/Rte 9 project. The Table V-16 below shows the results of the model for the five options and the 2040 no-build.

Table V-16: Results from the Travel Demand Model Analysis by Option

Model Analysis	Option 1	Option 1A	Option 2	Option 2A	Option 3	2040 No Build
Miles of congested roadways	36.2	36.2	36.4	36.4	37.7	38.3
Reduction in miles of congested roadways (vs. No Build)	2.1	2.1	1.9	1.9	0.6	
Vehicle Miles Travelled	21,224,621	21,224,224	21,223,672	21,221,728	21,192,889	21,291,110
Reduction in Vehicle Miles Travelled (vs. No Build)	66,489	66,886	67,438	69,382	98,221	

Project Analysis Results

Table V-17 summarizes the results from all the analyses done and rank the options based the results previously discussed.

Table V-17: Ranking of Highway Projects Options

	Congestion Reduction	Reduction in Vehicle Miles Travelled	Benefits to EJ areas	Public Input	Geographic Equity	GHG savings	Preferred Option Ranking
Option 1 & 1A	**1**	3	**1**	**1**	**1**	2	**First**
Option 2 & 2A	2	2	3	3	**1**	2	**Third**
Option 3	3	**1**	2	2	2	2	**Second**

Based on the ranking tabulated above the CMMPO picked Option 1 as the preferred highway major infrastructure projects as part of this plan. The Major Infrastructure Highway Projects included in Mobility2040 are included in Table V-18.

Table V-18: Major Infrastructure Highway Projects

Recommended Implementation Schedule	Project	Project Scope
2015-2020	Route 9 - West Brookfield	2.1 mile segment of rural highway requires widening by 10' to address safety and accommodate Bicycles and Pedestrians.
2021-2025	Route 9/20 Interchange - Northborough	MassDOT indicates need to replace 1930's bridge structure. Existing ramps replaced by conceptual diamond style geometry.
2026-2030	I-290/Vernon St/Kelly Square Bridge Expansion - Worcester	Reconstruction & widening of Vernon Street (Route 122A) bridge over I-290 and related ramp work
2031-2035	Route 146/20/MassPike Interchange - Millbury	Observed congestion causes operational issues. Investigate improved signals and interchange roadways.
2036-2040	Kelly Square Bypass - Worcester	Utilizes conceptual Winter Street Extension to Madison Street alignment. Reduces overall traffic volumes in Kelly Square. Also reduces truck volumes.

Note: It is currently assumed that implementation of the following projects will be pursued using primarily State controlled funding sources

- *I - 90 (MassPike)/I - 495 Interchange: Major reconstruction follows removal of tolls (Westborough/Hopinkton)*
- *I - 495/Route 9 Interchange: Major reconstruction on braided ramps with Route 9 improvements (Westborough/Southborough)*

Project Options Phase 2

The MPO voted on May 27, 2015 to include Option 1 in the draft Mobility2040 plan to release to public review on June 10, 2015. Before the June 10th meeting following were some of the concerns and comments expressed regarding the Major Infrastrcture Option 1 project listing:

- Significant concern expressed by MassDOT District 3 and the towns of Oxford & Charlton regarding the loss of project #602659-Route 20 Oxford/Charlton after having been listed in previous LRTPs. The project has just filed for ENF review and design is pre-25%, with associated costs.
- CMMPO staff suggested to MassDOT District 3 that if they could split the project into 2 phases and provide a project option that costs in the range of $18-19M each, staff would bring that option to the MPO meeting on June 10th as a project that would spend about 50% of the anticipated TIP funds for 2 years, leaving about $9M each of those 2 years for community generated TIP projects. That Major Infrastructure option would then be debated against the option voted on at the May 27th meeting.
- MassDOT OTP informed staff that all projects assuming statewide funding should be removed. Statewide projects will be assessed against Project Selection Advisory Council recommended process and criteria. This means that I495/I90 and I495/Rte 9 projects must be removed from the financially constrained project listing of the LRTP, and cannot be advanced at this time if federal funding or federal review is needed.

Additional Points of Consideration

1. The City of Worcester Commissioner of Public Works & Parks expressed to MassDOT District 3 that it's acceptable to remove the envisioned Kelly Square Bypass from this LRTP.
2. The Route 20 Charlton/Oxford project can be phased into two projects that would meet FHWA funding requirements. Phase 1 would reconstruct Route 20 from the Routes 12/20 project limit in Oxford up to and including the Route 20/56 intersection, a documented HSIP location. Phase 2 will be Route 20 reconstruction from Route 20/56 intersection west to Richardson's corner in Charlton.
3. MassDOT District 3 staff expressed opinion that the Route 9/20 Northborough project could receive bridge monies in the future and can be moved out of the financially-constrained portion of the LRTP. Since the LRTP cannot list projects constrained with statewide funding, and this is not guaranteed, one of the options includes Rte 9/20 Northborough, and a second option includes I-495/Rte 9 Interchange Improvements to allow continued design to progress.

Given the above, the following options were developed (with projects that were previously under consideration) for the MPO members to consider and make a final decision on Wednesday, June10th.

Option X

2016-2020 – Rte 9 West Brookfield
2021-2025 – Rte 20 Oxford (12/20 to Rte 20/56 intersection)
2026-2030 – Rte 9/Rte 20 Northborough
2031-2035 – I-290/Vernon/Kelly Square Bridge Expansion
2036-2040 – Rte 146/20/Masspike Interchange

Option Y

2016-2020 – Rte 9 West Brookfield
2021-2025 – Rte 20 Oxford (12/20 to Rte 20/56 intersection)
2026-2030 – Rte 20 Oxford/Charlton (West of Rte 20/56 to Richardson's corner)
2031-2035 – I-290/Vernon/Kelly Square Bridge Expansion
2036-2040 – Rte 146/20/Masspike Interchange

Option Z

2016-2020 – Rte 9 West Brookfield
2021-2025 – I495/Rte 9 Interchange Improvements **(2 TIP yrs)**
2026-2030 – Rte 20 Oxford (12/20 to Rte 20/56 intersection)
2031-2035 – I-290/Vernon/Kelly Square Bridge Expansion
2036-2040 – Rte 146/20/Masspike Interchange

The new options were modeled for VMT & congestion reduction, and for Environmental Justice Benefits & Burdens. The Travel Demand Model results for VMT & congestion reduction for the three new options along with Option 1 are in Table V-19 below.

Table V-19: Travel Demand Model Results for VMT & Congestion Reduction

Model Analysis	Option 1	Option X	Option Y	Option Z	No build
Miles of congested roadways	36.2	35.5	36.1	36.2	38.3
Reduction in miles of congested roadways	2.1	2.8	2.2	2.1	
VMT	21,224,621	20,953,503	21,431,758	21,277,594	21291110
Reduction in VMT	66,489	337,607	-140,648	13,516	

The EJ benefits and burdens analysis comparing the effect of VMT increase in EJ vs. Non-EJ areas are shown in Table V-20 on the following page.

Table V-20: EJ Benefits and Burdens Analysis Using VMT

	Non-EJ Areas		EJ Areas		Total	
	VMT	% increase by 2040	VMT	% increase by 2040	VMT	% increase by 2040
Base 2010	***14,295,512***		***4,876,183***		***19,171,695***	
No Build Scenario	***15,818,236***	***10.7%***	***5,472,875***	***12.2%***	***21,291,110***	***11.1%***
Option 1 (voted by the MPO)	***15,779,418***	***10.4%***	***5,445,203***	***11.7%***	***21,224,621***	***10.7%***
Average New Build Options	***15,772,948***	***10.3%***	***5,443,145***	***11.6%***	***21,216,093***	***10.7%***
Option X	15,772,948	10.3%	5,441,092	11.6%	21,214,040	10.7%
Option Y	15,772,948	10.3%	5,441,092	11.6%	21,214,040	10.7%
Option Z	15,772,948	10.3%	5,447,251	11.7%	21,220,199	10.7%

They were also assessed for greenhouse gas (GHG) reduction, geographic equity, and Highway Safety Improvement Program (HSIP) crash clusters. Based on these analysis following are the rankings of the options for each of the performance focus areas:

Table V-21: Performance Focus Area Rankings

Project Options	Focus Area Rankings							Perf. Mgmt Option Rank
	Reduction in Cong. Rdway (miles)	Reduction in VMT	EJ Benefits and Burdens	GHG Savings	Geographic Equity	Safety HSIP	Total	
MPO Voted Option 1 (May 27th) 2016-2020 – Rte 9 West Brookfield 2021-2025 – Rte 9/Rte 20 Northborough 2026-2030 – I-290/Vernon/Kelly Square Bridge Expansion 2031-2035 – Rte 146/20/Masspike Interchange 2036-2040 – Kelly Square Bypass – Worcester	2	2	1	1	2	1	9	Second
Option X 2016-2020 – Rte 9 West Brookfield 2021-2025 – Rte 20 Oxford (12/20 to Rte 20/56 intersection) 2026-2030 – Rte 9/Rte 20 Northborough 2031-2035 – I-290/Vernon/Kelly Square Bridge Expansion 2036-2040 – Rte 146/20/Masspike Interchange	1	1	1	1	1	1	6	First
Option Y 2016-2020 – Rte 9 West Brookfield 2021-2025 – Rte 20 Oxford (12/20 to Rte 20/56 intersection) 2026-2030 – Rte 20 Oxford/Charlton (West of Rte 20/56 to Richardson's corner) 2031-2035 – I-290/Vernon/Kelly Square Bridge Expansion 2036-2040 – Rte 146/20/Masspike Interchange	2	4	1	2	2	2	13	Third
Option Z 2016-2020 – Rte 9 West Brookfield 2021-2025 – I495/Rte 9 Interchange Improvements **(2 TIP yrs)** 2026-2030 – Rte 20 Oxford (12/20 to Rte 20/56 intersection) 2031-2035 – I-290/Vernon/Kelly Square Bridge Expansion 2036-2040 – Rte 146/20/Masspike Interchange	2	3	1	1	1	1	9	Second
1 = Best option for each focus area								

Highway Major Infrastructure Projects

The CMMPO took various criteria under consideration and selected Option Y with the inclusion of Route 9 improvements from the I-495/Route 9 Interchange to Route 9/Crystal Pond Road intersection. The criterion that were included in the discussion were:

- The Route 20 westbound to Route 9 westbound ramp at the Route 9/Route 20 interchange in Northborough will be advertised for construction in 2016. This project will solve major safety concerns. This ramp has the highest number of crashes at the interchange. As reported in the Road Safety Audit that was conducted at this interchange in December 2012, of 110 reported crashes within the interchange between October 1, 2011 and August 28, 2012, 65 (59%) occurred on the Route 20 ramp to Route 9 westbound. Also, the bridge over Route 20 has a fairly low bridge rating and is anticipated to rise on the MassDOT statewide bridge listing for replacement in the future. Since the scope and cost of the bridge would be significant, it would be the appropriate time to redesign and improve the entire interchange. As such, the Route 9/Route 20 interchange project was dropped from the Major Infrastructure project list at this time. The host communities impacted by the removal of the Route 9/Route 20 interchange from the Major Infrastructure list were in consensus with this approach.

- I-495/Route 9 interchange initial design had recommendations with regards to Route 9 improvement through the interchange area as well as the interchange configuration itself. The I-495 bridges over Route 9 will be the driver of future interchange improvements. The state will reconstruct the bridges and the interchange when the bridges move up on the MassDOT bridge list due to the poor rating. At the request of MassDOT, the project scope for the Mobility2040 Major Infrastructure was changed from I-495/Route 9 interchange improvements to Route 9 improvements at the interchange. The cost of the project was also reduced from $37M to $9M. The scope of the Route 9 improvements include enhancing safety and capacity between the Route 9/Research Drive/Computer Drive Interchange with I-495 to the Route 9/Crystal Pond Road intersection in Southborough (MAPC region). Given the reduction in the scope and cost of the I-495/Route 9 project, it was moved by the CMMPO into the 2021-2025 Major Infrastructure band.

- In addition, the host community and stakeholder input received regarding the safety concerns along Route 20 in Charlton and Oxford was strongly considered as a factor to also include improvements to Route 20 west of the Route 20/Route 56 intersection to

Richardson Corners in Charlton as one of the Major Infrastructure project in Mobility2040.

The list of the financially constrained Major Infrastructure highway projects in the Mobility2040 are included in the following Table V-22:

Table V-22 Major Infrastructure Highway Projects

Recommended Implementation Schedule	Project Name	Project Scope
2016-2020	Route 9 - West Brookfield	2.1 mile segment of rural highway requires widening by 10' to address safety and accommodate bicycles and pedestrians
2021-2025	Rte 9 Improvements from Rte 9/I-495 interchange to Rte 9/Crystal Pond Road intersection	Enhance safety and capacity improvements along Rte 9
	Rte 20 Oxford (Rte 20/12 to Rte 20/56 intersection)	Rte 20 modernization with median barrier and intersection improvements Charlton/Oxford
2026-2030	Rte 20 Oxford/Charlton (West of Rte 20/56 to Richardson's corner)	Rte 20 modernization with median barrier and intersection improvements Charlton/Oxford
2031-2035	I-290/Vernon St/Kelly Square Bridge Expansion - Worcester	Reconstruction & widening of Vernon Street (Route 122A) bridge over I-290 and related ramp work
2036-2040	Route 146/20/MassPike Interchange - Millbury	Observed congestion causes operational issues. Investigate improved signals and interchange roadways.

Multi-Modal Major Infrastructure Projects and Initiatives

As described in the above sections various transportation needs and gaps were prioritized and scenarios were analyzed and ranked to finalize a multi-modal list of infrastructure projects. The final list of projects and intiatives that are listed in Table V-23 below help make progress to attain the goals and the objectives that are set as part of the Mobility2040 plan.

Table V-23 Multi-Modal Major Infrastructure Projects and Initiatives

Bicycle and Pedestrian Projects/Initiatives

Recommended Implementation Schedule	Project	Project Scope	Project/Initiative
2015-2020	Boston Worcester Air-Line Trail	TIP or TAP funding ($500k)	Project
2015-2020	Blackstone Rive Greenway (Segments 3,4 and 5)	Staff will pursue an Initiative to collaborate with the lead agency to identify segments, establish costs for each segment and project scope	Initiative
2020-2025	Multimodal Connection: Blackstone River Greenway to Mass-Central Rail Trail	Staff will pursue an Initiative to collaborate with the lead agency to establish costs and project scope	Initiative
2020-2025	Pedestrian Connection: Blackstone River Greenway to Mid-State Trail	Staff will pursue an Initiative to collaborate with the lead agency to establish costs and project scope	Initiative

Transit Projects/Initiatives

Recommended Implementation Schedule	Project	Project Scope
2015-2020	Route 43 - New route connecting Webster, Dudley, Southbridge, and Sturbridge	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2015-2020	Route 32 - New route to connect Holden with Worcester.	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2020-2025	Route 17 - New route to connect Westborough Office Park, Solomon Pond Mall, and Northborough Crossing (Wegman's).	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2020-2025	Route 44 - Proposed new route to connect colleges: - Becker, WPI, Assumption, WSU, Clark, Holy Corss, Quinsigamond CC	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2015-2040	New fixed route buses	Replacement or expansion of the WRTA fixed route fleet.

Commuter Rail Projects/Initiatives

Recommended Implementation Schedule	Project	Project Scope
2020-2025	Worcester-Providence passenger service and railroad improvements	Private Railroad operations and funding
2015-2040	MBTA commuter rail station upgrades	MBTA funding

Freight Rail Projects/Initiatives

Recommended Implementation Schedule	Project	Project Scope
2015-2020	Grafton & Upton Railroad	At-grade highway crossing improvements (Private funding)
2020-2025	Providence & Worcester Railroad	Bridge over Southbridge Street (Private funding)
2015-2040	EB & S Railroad	Various expansion and IRAP track improvements for improved operations (Private funding)
2015-2040	Providence & Worcester Railroad	IRAP track improvements (Private funding)

Highway Projects/Initiatives

Recommended Implementation Schedule	Project Name	Project Scope
2016-2020	Route 9 - West Brookfield	2.1 mile segment of rural highway requires widening by 10' to address safety and accommodate bicycles and pedestrians
2021-2025	Rte 9 Improvements from Rte 9/I-495 interchange to Rte 9/Crystal Pond Road intersection	Enhance safety and capacity improvements along Rte 9
	Rte 20 Oxford (Rte 20/12 to Rte 20/56 intersection)	Rte 20 modernization with median barrier and intersection improvements Charlton/Oxford
2026-2030	Rte 20 Oxford/Charlton (West of Rte 20/56 to Richardson's corner)	Rte 20 modernization with median barrier and intersection improvements Charlton/Oxford
2031-2035	I-290/Vernon St/Kelly Square Bridge Expansion - Worcester	Reconstruction & widening of Vernon Street (Route 122A) bridge over I-290 and related ramp work
2036-2040	Route 146/20/MassPike Interchange - Millbury	Observed congestion causes operational issues. Investigate improved signals and interchange roadways.

CHAPTER VI

Financial Plan

Constrained Recommendations & Future Initiatives

Introduction

Federal MAP-21 regulations require that the long-range regional transportation plan be a financially-constrained document. To ensure financial constraint, it is necessary to estimate the costs of all projects recommended in Mobility2040 and to assess the amount of funds that are expected to be available over the course of the planning horizon (2016-2040). Ultimately, the costs of the proposed projects should not exceed that of the expected funding. Because there is not enough expected revenue to meet all the need, not all the projects identified in the needs analysis can be included in the Financial Plan.

Throughout the past year, the CMMPO has embarked on a process to define and assess projects and initiatives for future programming based on:

- Review of all available data, including management systems data
- Sought and received extensive public input on needs and priorities for funding
- Developed policies, projects, and initiatives for possible consideration

In order to prioritize projects for funding, projects and initiatives then went through a two-step process. In the first step, projects and initiatives were prioritized into three tiers based on how well they address measures within the CMMPO performance management goals of:

- Reduce congestion & improve mobility for all modes
- Improve the safety & security of the region
- Achieve a state of good repair
- Increase transportation options & promote healthy modes
- Reduce greenhouse gas & promote sustainable practices
- Equitable transportation for all populations
- Improve economic vitality & freight movement

In the second step, the projects, primarily drawn from Tier 1, were combined into five scenarios which placed the projects into financially-constrained five-year bands for implementation through 2040. These scenarios were then analyzed in the Travel Demand model, and assessed for:

- congestion reduction and savings in vehicle miles travelled
- greenhouse gas effects
- geographic equity
- environmental justice benefits and burdens

- consistency with prior public input

Based on this analysis, the CMMPO chose the mix of projects and the initiatives presented in this chapter.

Management & Operations Considerations

Given the limited funding, competing priorities, and the comprehensive list of unmet needs, it is crucial to maintain and operate the current system at optimal efficiency. Also various management and operation methodologies such as ITS, Transportation Demand Management strategies, Park and Ride lots, Transit Signal Priority, and Corridor Management strategies such as signal coordination will help the region reach its goals of improving mobility, reducing greenhouse gases, improving sustainability and promoting economic development. Given these considerations, in addition to a short list of major infrastructure projects, the CMMPO was presented with two funding options to spend the regional target funding among diverse transportation programs and modes.

The Regional discretionary funding is essentially the expected TIP funding for the region over the next 25 years. This category is used to program Major Infrastructure project/s for each of the five year bands and the annual TIP program. Moving forward the CMMPO will prioritize those TIP projects that address a number of major goal areas and help the region achieve performance measures and targets. The MPO realizes the need to maintain our current infrastructure and this will be accomplished by some of the TIP projects and more importantly by state and local funding that is available to operate and maintain much of the road network in the region.

Funding Options

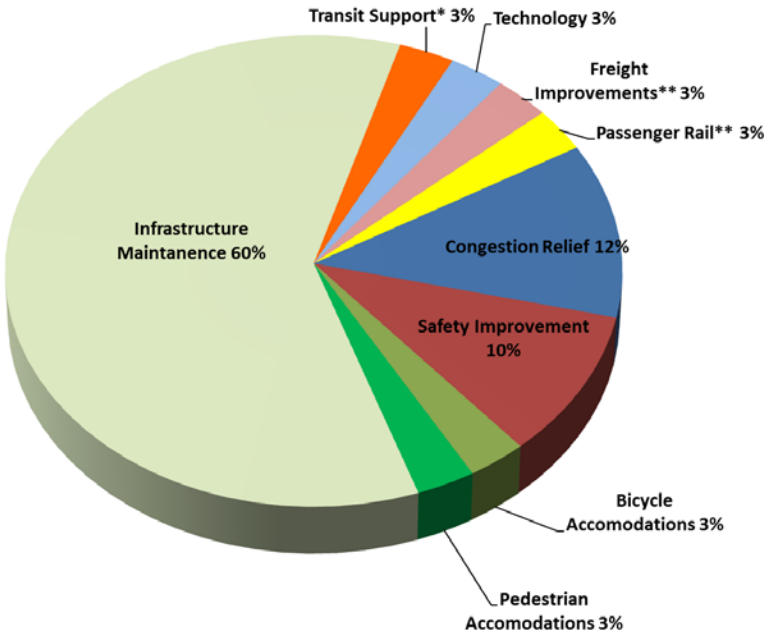
Option 1 showed a funding scenario that maintained current roadway and bridge infrastructure in the "fair" category with 60% of the total regional transportation spending allocation. High funding allocations were also included for improved safety and congestion reduction projects, as well as separate funding categories created for bicycle and pedestrian infrastructure improvements. The remaining categories in Option 1 (transit support, technology, freight and passenger rail) were funded at an allocation of 3% each.

Option 2 showed a funding scenario that still maintains current roadway and bridge infrastructure in the "fair" category but also maintains the Overall Condition Index (OCI) at the current level, requiring a funding allocation increase from 60% to 70%. This necessitated

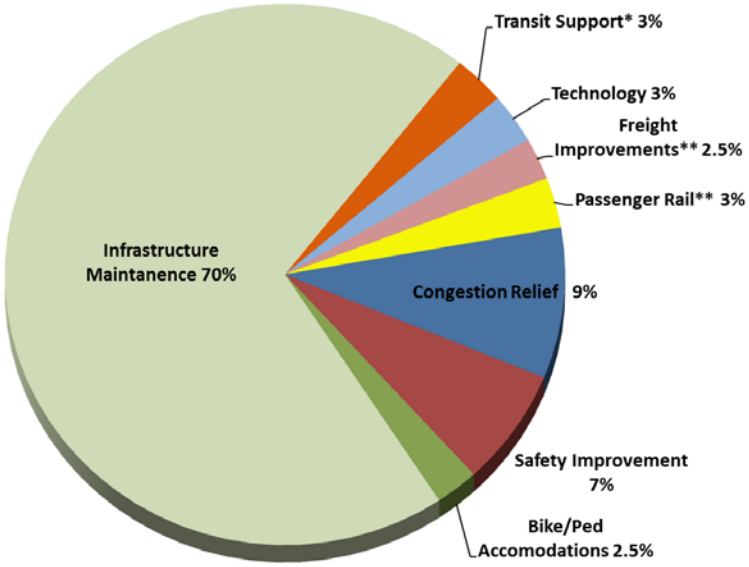
decreasing congestion reduction and safety funding allocations to the mandated minimums of 7 and 9 percent respectively, and also reducing funding allocations for the bicycle, pedestrian and Freight categories. The remaining transit support, technology and passenger rail maintained the 3% funding allocation amounts.

Figure VI-1: Funding Options

OPTION 1



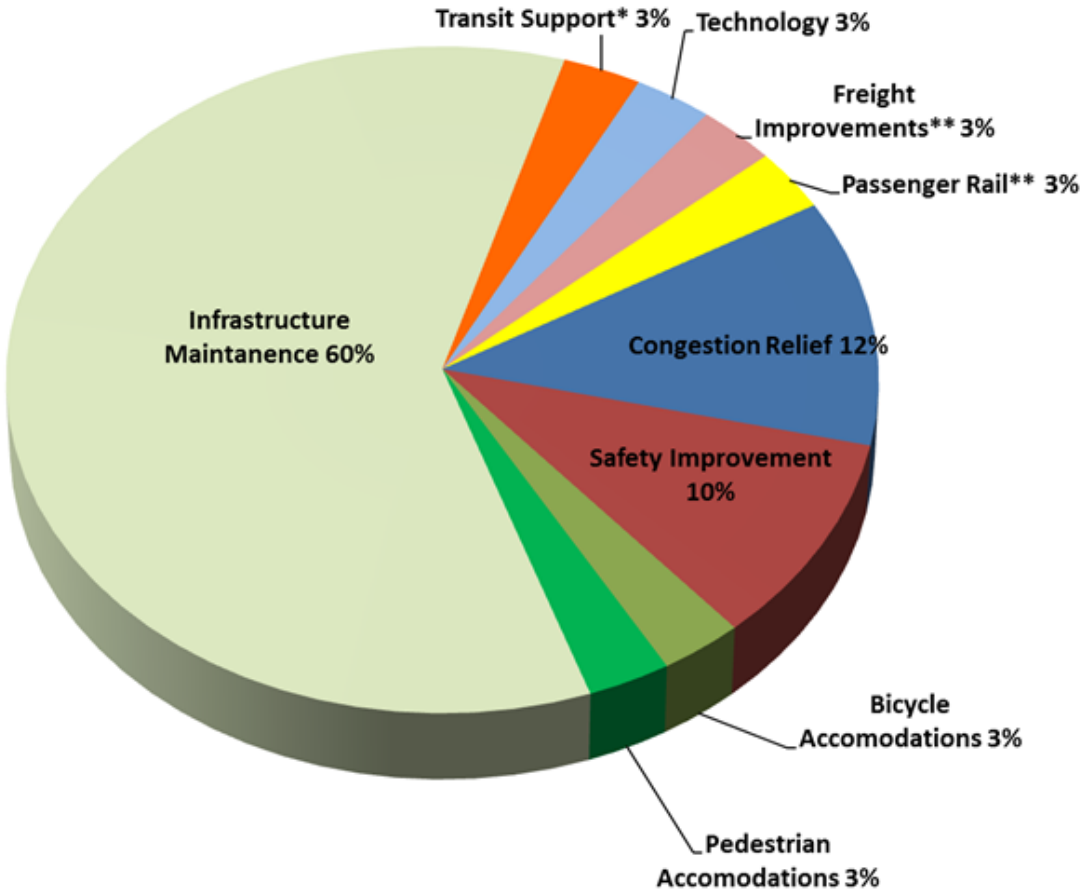
OPTION2



Upon review of the two options, and with consideration of public input received (Option 1 – 79% and Option 2- 21%), the CMMPO chose Option 1 as the preferred funding scenario.

In summary, the MPO expects to distribute the regional target funding through the Transportation Improvement Program amongst the following programs:

- Infrastructure Maintenance – 60%
- Congestion Relief – 12%
- Safety Improvement – 10%
- Bicycle Accommodations – 3%
- Pedestrian Accommodations – 3%
- Passenger Rail Enhancements** – 3%
- Freight Improvements** – 3%
- Transit Support* – 3%



* - i.e., (ParknRide, TSP/Signal Coordination, Corridor Improvement, TMA support)

** - Initiatives/Studies, last mile connections etc.

Policies

While the CMMPO did not adopt any new policies during the development of Mobility2040, their adoption of Option 1 allocation of funding from regional targets and their choices of major initiatives and infrastructure projects re-affirms the commitment to:

- provide for an increasingly balanced multi-modal transportation system that will improve the mobility for users of all modes;
- provide adequate funding to maintain the current system;
- increase healthy options that reduce congestion and greenhouse gas, and are more sustainable;
- improve system safety and security; and
- continue to promote economic vitality & freight movement.

Major Infrastructure Projects and Initiatives

Highway-Funded Projects & Initiatives

Projected Revenue

The major source of funding for highway-related projects in apportionments provided through the Federal Highway Administration (FHWA). These funds typically provide 80% of project funds, with the remaining 20% coming from a state match. Federal funds are usually derived from gasoline tax revenues, and state funds from the Transportation Bond Bill which is paid through either gasoline tax revenues or general tax funds.

MAP-21 provided federal transportation funding from 2012-2014 and now, through Continuing Resolutions to July 31, 2015. To estimate federal funding beyond 2015, the MassDOT-Office of Transportation Planning (OTP) developed programming assumptions based on guidance from FHWA, and provided these estimates to each MPO region in Massachusetts.

Table VI-1

FFY 2016-2040 Estimated Regional Transportation Plan Highway Funding Available

	2016-2020 (Programmed in TIP till 2019)	2021-2025	2026-2030	2031-2035	2036-2040	Total
Total Highway Revenue Available for Programming	**$302,231,831**	**$301,390,973**	**$366,263,046**	**$409,458,880**	**$438,246,120**	**$1,817,590,850**
Bridges	$105,739,644	$102,407,572	$127,968,921	$144,902,565	$156,101,216	$637,119,918
National Highway System	$21,798,880	$21,111,953	$26,381,582	$29,872,558	$32,181,229	$131,346,202
Interstate Maintenance	$38,527,505	$36,464,440	$45,566,114	$51,595,706	$55,583,228	$227,736,993
Non Federal Aid Preservation (bridges and roadways)	$43,450,500	$44,102,258	$44,754,015	$45,405,773	$46,057,530	$223,770,076
Statewide Infrastructure	$3,391,937	$3,285,050	$4,105,012	$4,648,212	$5,007,445	$20,437,656
Regional Discretionary Funding (O&M and Major Infrastructure)**	**$89,323,365**	**$94,019,700**	**$117,487,402**	**$133,034,066**	**$143,315,472**	**$577,180,005**

** - Expected Transporation Improvement Program Funding

Projected Expenses

Initiatives

There are several projects that still require more definition before moving forward, which have been termed Initiatives. The remaining segments of the Blackstone River Greenway, the Multimodal connection between the Blackstone River Greenway to the Mass-Central Rail Trail, and the Pedestrian Connection between Blackstone River Greenway to the Mid-State Trail are all initiatives to be undertaken that would seek to identify the project lead agency and define the project scope. The goal of each initiative would be to define the project enough to be programmed in future LRTPs, or otherwise lead to the implementation of the projects in future years.

Table VI-2: Bicycle and Pedestrian Initiatives

Study Cost will be included in the Unified Planning Work Program

Recommended Implementation Schedule	Project	Project Scope
2015-2020	Blackstone River Greenway (Segments 3,4 and 5)	To collaborate with the lead agency to identify segments, establish costs for each segment and project scope
2020-2025	Multimodal Connection: Blackstone River Greenway to Mass-Central Rail Trail	To collaborate with the lead agency to establish costs and project scope
2020-2025	Pedestrian Connection: Blackstone River Greenway to Mid-State Trail	To collaborate with the lead agency to establish costs and project scope

Projects

The CMMPO deliberated extensively on what major highway-related projects to recommend in the Mobility2040 Plan, given the need to remain within the constraints of estimated funding available, and given that revenues are only expected to grow at 1.5% and costs are projected to grow at 4%. This task was made more difficult for projects in the later years of the plan because it was often necessary to estimate costs on projects that are in the early concept stages. The process of estimating costs began with the Stakeholder Consultation interviews conducted as part of the RTP early public outreach. As the process continued, CMMPO staff discussed the scope and estimated costs of potential major infrastructure projects with MassDOT District #3. This coordination continued to take place throughout the development of the RTP with input from MassDOT-OTP staff. All estimated costs were inflated at 4% per year after the year 2016. The following Table VI-3 represent the CMMPO recommendations. Refer to Figure VI-2 for the location of all major infrastructure projects recommended in the plan.

The one bicycle and pedestrian project to receive funding is the Boston-Worcester Airline Trail in Shrewsbury and Westborough. This project is anticipated to receive TIP or Transportation Alternatives Program (TAP) funds. All freight projects programmed are anticipated to use private funding.

Table VI-3: Major Infrastructure Projects

Highway Projects

Recommended Implementation Schedule	Project Name	Project Scope	Project Cost (in Millions)
2016-2020	Route 9 - West Brookfield	2.1 mile segment of rural highway requires widening by 10' to address safety and accommodate bicycles and pedestrians	$12.17
2021-2025	Rte 9 Improvements from Rte 9/I-495 interchange to Rte 9/Crystal Pond Road intersection	Enhance safety and capacity improvements along Rte 9	$11.40
	Rte 20 Oxford (Rte 20/12 to Rte 20/56 intersection)	Rte 20 modernization with median barrier and intersection improvements Charlton/Oxford	$23.00
2026-2030	Rte 20 Oxford/Charlton (West of Rte 20/56 to Richardson's corner)	Rte 20 modernization with median barrier and intersection improvements Charlton/Oxford	$34.00
2031-2035	I-290/Vernon St/Kelly Square Bridge Expansion - Worcester	Reconstruction & widening of Vernon Street (Route 122A) bridge over I-290 and related ramp work	$23.84
2036-2040	Route 146/20/MassPike Interchange - Millbury	Observed congestion causes operational issues. Investigate improved signals and interchange roadways.	$29.00

Bicycle and Pedestrian Projects

Recommended Implementation Schedule	Project	Project Cost (in Millions)	Project Scope
2015-2020	Boston Worcester Air-Line Trail	$0.50	TIP or TAP funding

Freight Rail Projects

Recommended Implementation Schedule	Project	Project Scope	Project Cost (in Millions)	Comment
2015-2020	Grafton & Upton Railroad	At-grade highway crossing improvements	$0.50	Grafton & Upton Railroad funding
2020-2025	Providence & Worcester Railroad	Bridge over Southbridge Street	$2.00	Providence &Worcester Railroad funding
2015-2040	East Brookfield & Spencer Railroad	Various expansion and IRAP track improvements for improved operations	$0.50	East Brookfield & Spencer Railroad funding
2015-2040	Providence & Worcester Railroad	IRAP track improvements	$0.50	Providence &Worcester Railroad funding

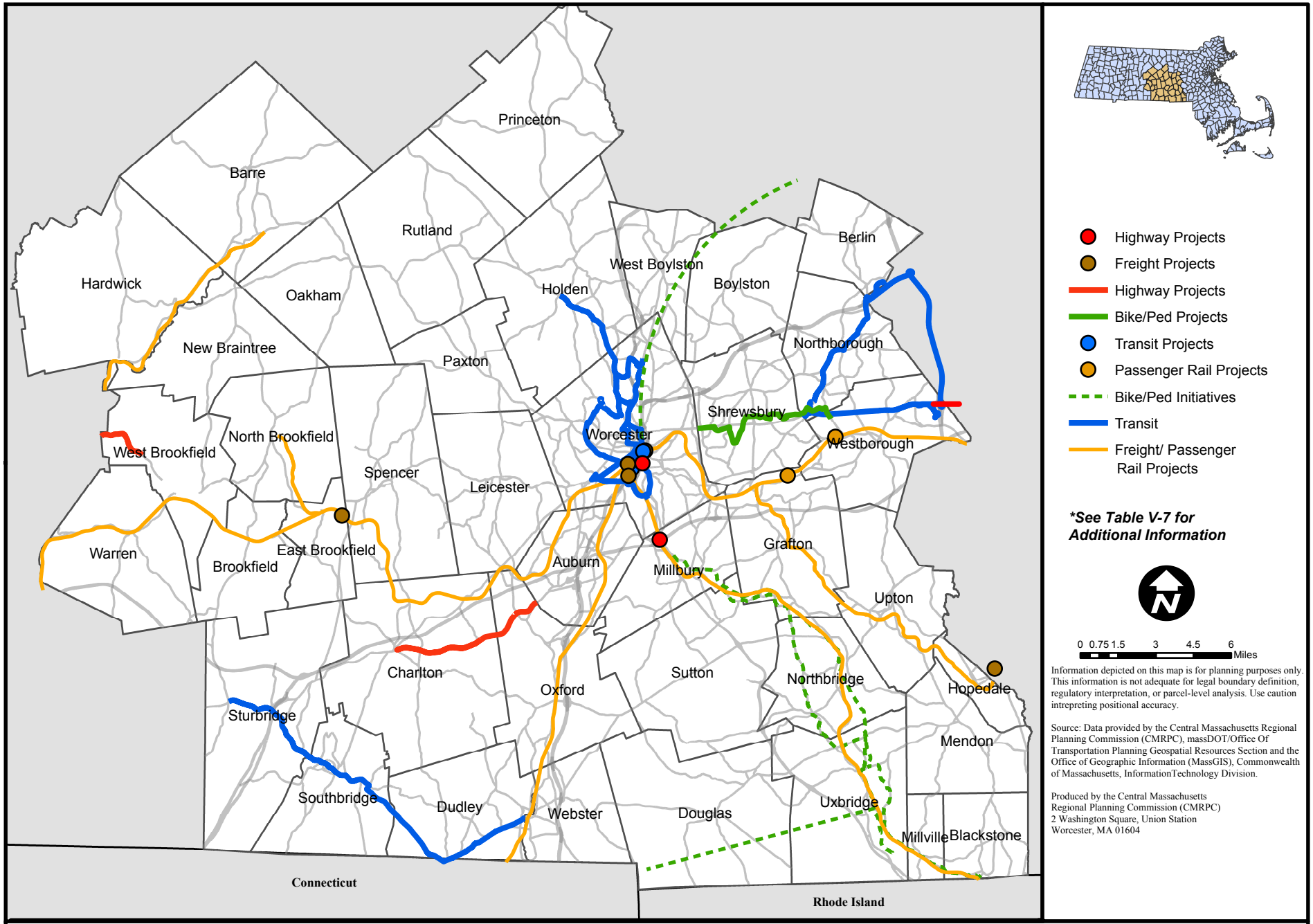


Figure VI-II Major Infrastructure

Major Infrastructure and Operations & Maintenance Expenditure

The Table VI-4 illustrates the allocation of the Regional discretionary funding for the Major Infrastructure and Operations and Maintenance categories.

Table VI-4: Major Infrastructure and Operations & Maintenance Expenditure

Project/Category	2016-2020 Costs (Anticipated 16-19 TIP years	Expected Cost 2021-2025	Expected Cost 2026-2030	Expected Cost 2031-2035	Expected Cost 2036-2040
Major Infrastructure					
Route 9 - West Brookfield	$12,170,000				
Rte 9 Improvements from Rte 9/I-495 interchange to Rte 9/Crystal Pond Road intersection		$11,400,000			
Rte 20 Oxford (Rte 20/12 to Rte 20/56 intersection)		$23,000,000			
Rte 20 Oxford/Charlton (West of Rte 20/56 to Richardson's corner)			$34,000,000		
I-290/Vernon St/Kelly Square Bridge Expansion - Worcester				$23,840,000	
Route 146/20/MassPike Interchange - Millbury					$29,000,000
Total Major Infrastucture Cost	$12,170,000	$34,400,000	$34,000,000	$23,840,000	$29,000,000
Expected Available Funding from Table VI-1	$89,323,365	$94,019,700	$117,487,402	$133,034,066	$143,315,472
Available Funding for Operations and Maintenance (O&M)	$77,153,365	$59,619,700	$83,487,402	$109,194,066	$114,315,472
Operations & Maintenance (O&M)					
Infrastructure Maintenance (60%)	$46,292,019	$35,771,820	$50,092,441	$65,516,440	$68,589,283
Congestion (12%)	$9,258,404	$7,154,364	$10,018,488	$13,103,288	$13,717,857
Safety (10%)	$7,715,337	$5,961,970	$8,348,740	$10,919,407	$11,431,547
Bicycle Accomodations (3%)	$2,314,601	$1,788,591	$2,504,622	$3,275,822	$3,429,464
Pedestrian Accomodations (3%)	$2,314,601	$1,788,591	$2,504,622	$3,275,822	$3,429,464
Technology (3%)	$2,314,601	$1,788,591	$2,504,622	$3,275,822	$3,429,464
Transit Support (3%)	$2,314,601	$1,788,591	$2,504,622	$3,275,822	$3,429,464
Passenger Rail Improvements (3%)	$2,314,601	$1,788,591	$2,504,622	$3,275,822	$3,429,464
Freight Improvements (3%)	$2,314,601	$1,788,591	$2,504,622	$3,275,822	$3,429,464
Total Operations and Maintenance (O&M) Cost	$77,153,365	$59,619,700	$83,487,402	$109,194,066	$114,315,472
Total Expenditure Major Infrastructure + Operations & Maintenance	**$89,323,365**	**$94,019,700**	**$117,487,402**	**$133,034,066**	**$143,315,472**
Expected Available Funding from Table VI-1	**$89,323,365**	**$94,019,700**	**$117,487,402**	**$133,034,066**	**$143,315,472**

Transit-Funded Projects & Initiatives

Projected Revenue

Estimates of available federal and state transit revenue were provided by the MassDOT-Office of Transportation Planning and the Rail & Transit Division. Typically, federal funds are used for capital expenses, although some funds are available for preventive maintenance and programs for rural areas, low-income commuters, and services for elders and people with disabilities. Capital funds are provided at 80% levels and operating funds are provided at 50% levels. Massachusetts provides approximately 55% of the net cost of operating regional transit authority services, with the federal government contributing 25% and member communities contributing the remaining 20%. A summary of projected revenue is presented in Table VI-5 below.

Table VI-5: FFY 2016-2040 Estimated Regional Transportation Plan Transit Funding

	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	Total
Total Transit Revenue Available for Programming	**$190,679,799**	**$206,663,268**	**$224,045,865**	**$242,957,253**	**$263,539,947**	**$1,127,886,132**
Urbanized Area Formula (5307)	$49,090,907	$52,884,849	$56,972,002	$61,375,026	$66,118,334	$286,441,118
State of Good Repair Program (5337)	$12,736,998	$13,721,365	$14,781,807	$15,924,204	$17,154,890	$74,319,264
Bus and Bus Facilities (5339)	$2,469,487	$2,660,339	$2,865,940	$3,087,432	$3,326,041	$14,409,239
RTA Capital Assistance Program*	$22,211,310	$23,927,888	$25,777,132	$27,769,291	$29,915,413	$129,601,034
Local Capital Match (City of Worcester)	$3,184,249	$3,430,341	$3,695,451	$3,981,050	$4,288,722	$18,579,813
Other Operating Revenue	$19,360,205	$20,856,439	$22,468,308	$24,204,749	$26,075,388	$112,965,089
State Contract Assistance for Operations*	$58,587,593	$63,115,476	$67,993,293	$73,248,087	$78,908,992	$331,853,441
Community Operating Subsidies	$23,039,050	$26,066,571	$29,491,932	$33,367,414	$37,752,167	$149,717,134

**Annual funding was increased at a rate of 1.5% to match that of Federal funding programs. These funding amounts will be adjusted on an annual basis, and may differ compared to the numbers presented here.*

Projected Expenses

Initiatives

The WRTA is considering expansion/upgrade of the WRTA Hub Transfer facility at Union Station and and implementation of Transit Signal Priority to improve the use of transit in congested areas.

The major capital rail initiatives anticipated over the planning horizon of Mobility2040 is the continued study of expanding high speed passenger rail between Worcester and Springfield, as well as possible passenger rail service re-instituted over Providence & Worcester rail lines through the Blackstone Valley from Worcester to Providence, RI. An additional initiative is possible upgrades to the three MBTA commuter rail stations in Westborough, Grafton, and Worcester.

Some of these initiatives are more likely to occur than others, but each will require additional study to move forward, and costs and revenue sources will have to be identified.

Projects

A major transit capital project anticipated over the planning horizon of Mobility2040 is the creation of transit “mini hubs”, to house vehicle fleets and serve as connection and transfer facilities. Another capital project is the replacement of the WRTA Maintenance and Operations facility, which is currently underway, and will be completed in 2016.

The WRTA also intends to embark on a replacement of the fixed route fleet once again in 2020 and has programmed a modest expansion of the fleet in the current TIP. The WRTA will be purchasing nine expansion vehicles beginning in 2017 to accommodate recommendations contained in the 2015 Comprehensive Service Analysis.

Table VI-6: Transit and Commuter Rail Projects

Transit Projects

Recommended Implementation Schedule	Project	Project Scope	Project Cost (in Millions	Comments
2015-2020	Route 43 - New route connecting Webster, Dudley, Southbridge, and Sturbridge	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA	Operating cost	Not part of capital expenditure
2015-2020	Route 32 - New route to connect Holden with Worcester.	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA	Operating cost	Not part of capital expenditure
2020-2025	Route 17 - New route to connect Westborough Office Park, Solomon Pond Mall, and Northborough Crossing (Wegman's).	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA	Operating cost	Not part of capital expenditure
2020-2025	Route 44 - Proposed new route to connect colleges: - Becker, WPI, Assumption, WSU, Clark, Holy Corss, Quinsigamond CC	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA	Operating cost	Not part of capital expenditure
2015-2040	New fixed route buses	Replacement or expansion of the WRTA fixed route fleet.	$93.00	Fleet expansion item

Commuter Rail Projects

Recommended Implementation Schedule	Project	Project Cost (in Millions)	Comment
2020-2025	Worcester-Providence passenger service and railroad improvements	TBD	Private Railroad operations and funding
2015-2040	MBTA commuter rail station upgrades	TBD	MBTA funding

It is expected that 5307 funds will be adequate to fund these. Ongoing capital expenditures associated with the existing operations are expected to equate with projected capital funds in later years.

The following Table VI-7 presents the expected expenses associated with transit.

Table VI-7: Projected Expenses Associated with Transit

Category	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	Total
Operating Capital	$34,102,540	$38,297,802	$42,972,654	$48,234,168	$54,157,300	$217,764,464
Ongoing Operations and Maintenance	$93,671,144	$101,845,459	$110,784,307	$120,554,307	$123,238,131	$558,093,348
Fleet Expansion – Fixed Route	$4,016,394					$4,016,394
Fleet Replacement – Fixed Route	$2,894,604	$23,537,338	$21,929,297	$30,829,965	$42,097,951	$121,289,155
Fleet Replacement – Demand Response	$3,646,111	$4,436,052	$5,397,135	$6,566,440	$7,989,079	$28,034,817
Ongoing Capital Expenses	$6,124,756	$7,451,702	$9,066,135	$11,030,339	$13,420,093	$47,093,025
M&O Facility GAN	$11,500,000					$11,500,000
Infrastructure – BRT Light	$2,000,000					$2,000,000
Infrastructure – Transit Mini-Hub	$2,000,000					$2,000,000
Infrastructure – Transit Signal Priority	$1,000,000					$1,000,000
Union Station State of Good Repair	$15,921,245	$17,151,703	$18,477,255	$19,905,252	$21,443,609	$92,899,064
Total Expenditure	**$176,876,794**	**$192,720,056**	**$208,626,783**	**$237,120,471**	**$262,346,163**	**$1,077,690,267**
Total Transit Revenue Available for Programming (Table VI-5)	**$190,679,799**	**$206,663,268**	**$224,045,865**	**$242,957,253**	**$263,539,947**	**$1,127,886,132**
Excess Revenue to be programmed based on availability	**$13,803,005**	**$13,943,212**	**$15,419,082**	**$5,836,782**	**$1,193,784**	**$50,195,865**

There are currently no passenger rail projects that need to be programmed in financial constraint.

Financial Constraint

The financial analysis provided above has addressed the revenue sources reasonably expected to be available, from both federal and state sources, and the costs associated with operations and maintenance needs of the existing transportation system, along with a limited number of projects intended to improve the multi-modal system selected by the CMMPO, following extensive public input. The analysis of projects and initiatives was performed for each of the following concerns:

1) regional funding priorities developed with public input

2) greenhouse gas impacts

3) congestion reduction-travel demand model outputs of vehicles miles traveled and miles of congested roadways

4) geographic equity

5) environmental justice benefits & burdens

6) safety & security impacts

7) state-of-good repair impacts

8) promotion of healthy modes

9) improve economic vitality & freight movement

Based on the above considerations, the Mobility2040, the 2016 long range transportation plan for the CMMPO region, has been determined to meet federal planning and financial constraint requirements.

CHAPTER VII

Air Quality and Greenhouse Gas Assessment

Since most all of Massachusetts (with limited exceptions) was designated on 5/21/12 by the United States Environmental Protection Agency as “unclassifiable/attainment” for the latest ozone standard, a conformity determination for the CMMPO 2016-40 long-range transportation plan is not required. Further details and background information are provided below.

Air Quality Conformity

Introduction

The 1990 Clean Air Act Amendments (CAAA) require metropolitan planning organizations within nonattainment and maintenance areas to perform air quality conformity determinations prior to the approval of Long-Range Transportation Plans (LRTPs) and Transportation Improvement Programs (TIPs), and at such other times as required by regulation. A nonattainment area is one that the U.S. Environmental Protection Agency (EPA) has designated as not meeting certain air quality standards. A maintenance area is a nonattainment area that now meets the standards and has been re-designated as maintaining the standard. A conformity determination is a demonstration that plans, programs, and projects are consistent with the State Implementation Plan (SIP) for attaining the air quality standards. The CAAA requirement to perform a conformity determination ensures that federal approval and funding go to transportation activities that are consistent with air quality goals.

The entire Commonwealth of Massachusetts was previously classified as nonattainment for ozone, and was divided into two nonattainment areas. The Eastern Massachusetts ozone nonattainment area included Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk, Plymouth, Suffolk, and Worcester counties. Berkshire, Franklin, Hampden, and Hampshire counties comprised the Western Massachusetts ozone nonattainment area. With these classifications, the 1990 Clean Air Act Amendments (CAAA) required the Commonwealth to reduce its emissions of volatile organic compounds (VOCs) and nitrogen oxides (NOx), the two major precursors to ozone formation to achieve attainment of the ozone standard.

As of April 22, 2002, the city of Worcester was re-designated as being in attainment for carbon monoxide (CO) with an EPA-approved limited maintenance plan. In areas with approved limited maintenance plans, federal actions requiring conformity determinations under the transportation conformity rule are considered to satisfy the "budget test" (as budgets are treated as not constraining in these areas for the length of the initial maintenance period). Any future required "project level" conformity determinations for projects located within this community will continue to use a "hot-spot" analysis to assure that any new transportation projects in this CO attainment area do not cause or contribute to carbon monoxide non-attainment.

Legislative and Regulatory Background

The 1970 Clean Air Act defined a one-hour national ambient air quality standard (NAAQS) for ground-level ozone. The 1990 CAAA further classified degrees of nonattainment of the one-hour standard based on the severity of the monitored levels of the pollutant. The entire commonwealth of Massachusetts was classified as being in serious nonattainment for the one-hour ozone standard, with a required attainment date of 1999.The attainment date was later extended, first to 2003 and a second time to 2007.

In 1997, the EPA proposed a new, eight-hour ozone standard that replaced the one- hour standard, effective June 15, 2005. Scientific information had shown that ozone could affect human health at lower levels, and over longer exposure times than one hour. The new standard was challenged in court, and after a lengthy legal battle, the courts upheld it. It was finalized in June 2004.The eight-hour standard is 0.08 parts per million, averaged over eight hours and not to be exceeded more than once per year. Nonattainment areas were again further classified based on the severity of the eight-hour values. Massachusetts as a whole was classified as being in moderate nonattainment for the eight-hour standard, and was separated into two nonattainment areas—Eastern Massachusetts and Western Massachusetts.

In March 2008, EPA published revisions to the eight-hour ozone NAAQS establishing a level of 0.075 ppm, (March 27, 2008; 73 FR 16483). In 2009, EPA announced it would reconsider this standard because it fell outside of the range recommended by the Clean Air Scientific Advisory Committee. However, EPA did not take final action on the reconsideration so the standard would remain at 0.075 ppm.

After reviewing data from Massachusetts monitoring stations, EPA sent a letter on December 16, 2011 proposing that only Dukes County would be designated as nonattainment for the new proposed 0.075 ozone standard. Massachusetts concurred with these findings.
On May 21, 2012, (77 FR 30088), the final rule was published in the Federal Register, defining the 2008 NAAQS at 0.075 ppm, the standard that was promulgated in March 2008. A second rule published on May 21, 2012 (77 FR 30160), revoked the 1997 ozone NAAQS to occur one year after the July 20, 2012 effective date of the 2008 NAAQS.

Also on May 21, 2012, the air quality designations areas for the 2008 NAAQS were published in the Federal Register. In this Federal Register, the only area in Massachusetts that was designated as nonattainment is Dukes County. All other Massachusetts counties were classified as unclassifiable/attainment.

All the Massachusetts MPOs and MassDOT continue to meet the requirements of air quality conformity according to the Code of Federal Regulations, and as evaluated through inter-agency consultation. Specifically:

On March 6, 2015, (80 FR 12264, effective April 6, 2015) EPA published the Final Rulemaking, "Implementation of the 2008 National Ambient Air Quality Standards (NAAQS) for Ozone: State Implementation Plan Requirements; Final Rule." This rulemaking removed transportation conformity to the 1997 Ozone NAAQS (the standard referenced by CLF and the subject of a 12/23/14 DC Circuit Court decision).
Link to Final EPA Rulemaking: http://www.gpo.gov/fdsys/pkg/FR-2015-03-06/pdf/2015-04012.pdf

Since the RTPs have been developed, reviewed, and will be approved after April 6, 2015, air quality conformity determinations to the 1997 Ozone NAAQS are no longer required, as those standards and all associated area designations have been permanently replaced by the 2008 NAAQS, which (with actually a stricter level of allowable ozone concentration than the 1997 standards) no longer designate Massachusetts as a non-attainment area(s) for ozone (except for Dukes County – see below).

Through the Interagency air quality consultation process (involving U.S. DOT, EPA, MassDEP, MassDOT, and the MPOs) the latest EPA rulemakings, the referenced court decision, ozone standards and area designations were all reviewed. Specific transportation conformity requirements in Massachusetts for this RTP round are as follows:

- No conformity determination is required for the 2008 Ozone NAAQS, as Dukes County (the only designated non-attainment area) is classified as an "isolated rural nonattainment area" and therefore only needs to evaluate transportation conformity when the Martha Vineyard Commission has a "regionally significant" project that would trigger conformity.

- The Boston carbon monoxide attainment area with a current maintenance plan in place (with a carbon monoxide motor vehicle emission budget) will prepare a carbon monoxide air quality analysis for the Boston Area (nine communities).

- The Lowell, Waltham, Worcester and Springfield Areas are classified attainment with a limited maintenance plan in place. No regional air quality analysis is required in limited maintenance plan areas as emissions may be treated as essentially not constraining for the

length of the maintenance period because it is unreasonable to expect that such areas will experience so much growth in that period that a violation of the carbon monoxide NAAQS would result. Therefore, in areas with approved limited maintenance plans, Federal actions requiring conformity determinations under the transportation conformity rule are considered to satisfy the "budget test." All other transportation conformity requirements under 40 CFR 93.109(b) continue to apply in limited maintenance areas, including project level conformity determinations based on carbon monoxide hot spot analyses under 40 CFR 93.116.

In consideration of the comments received, combined with MassDOT's greenhouse gas (GHG) reporting requirements for the Commonwealth's Global Warming Solutions Act (310 CMR 60.05), MassDOT will conduct a "conformity-related" emissions analysis for ozone precursors, consistent with the 1997 NAAQS standards (currently superseded by the 2008 NAAQS). This emissions analysis will be for informational purposes only (as it is currently NOT federally required), and will be contained in a separate air quality document (also to include GHG emissions analysis) that will be completed at the end of August 2015 – the results of which will then be available to the MPOs, the Massachusetts Executive Office of Energy and Environmental Affairs (and affiliate agencies), and all other interested parties.

Green House Analysis

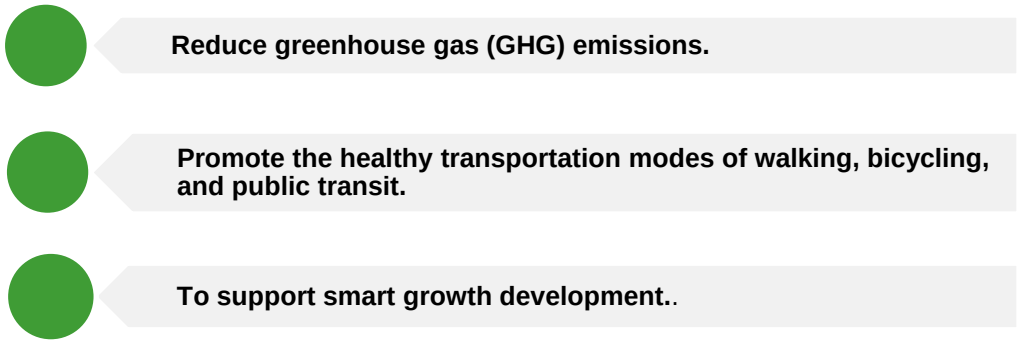
CMMPO and the Global Warming Solutions Act

The Commonwealth's Global Warming Solutions Act (GWSA) of 2008 requires statewide reductions in greenhouse gas (GHG) emissions of 25 percent below 1990 levels by the year 2020, and 80 percent below 1990 levels by 2050. As part of the GWSA, the Executive Office of Energy and Environmental Affairs developed the Massachusetts Clean Energy and Climate Plan (CECP), which outlines programs to attain the 25 percent reduction by 2020 – including a 7.6 percent reduction that would be attributed to the transportation sector.

Figure VII-1: Targets for Overall Statewide GHG Emissions

The Commonwealth's thirteen metropolitan planning organizations (MPOs) are integrally involved in helping to achieve greenhouse gas reductions mandated under the GWSA. The MPOs work closely with the Massachusetts Department of Transportation (MassDOT) and other involved agencies to develop common transportation goals, policies, and projects that would help to reduce GHG emission levels statewide. For example, one of the programs in the CECP is MassDOT's sustainability initiative known as GreenDOT. GreenDOT policy goals were developed in accordance with the GWSA, and are as follows:

Figure VII-2: GreenDOT Policy Directive Principal Objectives


Reduce greenhouse gas (GHG) emissions.
Promote the healthy transportation modes of walking, bicycling, and public transit.
To support smart growth development..

The Central Massachusetts MPO shares in these goals and is working to meet the specific requirements of the GWSA regulation – *Global Warming Solutions Act Requirements for the Transportation Sector and the Massachusetts Department of Transportation (310 CMR 60.05).* The purpose of this regulation is to assist the Commonwealth in achieving their adopted GHG emission reduction goals by:

- Requiring MassDOT to demonstrate that its GHG reduction commitments and targets are being achieved
- Requiring each MPO to evaluate and track the GHG emissions and impacts of its Regional Transportation Plan and Transportation Improvement Program
- Requiring each MPO, in consultation with MassDOT, to develop and utilize procedures to prioritize and select projects in its RTP and TIP based on factors that include GHG emissions and impacts

Meeting the requirements of this regulation will be achieved through the transportation goals and policies contained in the 2016 Regional Transportation Plan, the major projects planned in the RTPs, and the mix of new transportation projects that are programmed and implemented through the Transportation Improvement Program. The GHG tracking and evaluation processes enable

the MPOs to identify the anticipated GHG impacts of the planned and programmed projects, and also to use GHG impacts as a criterion in prioritizing transportation projects. This approach by the MPO is consistent with the greenhouse gas reduction policies of promoting healthy transportation modes through prioritizing and programming an appropriate balance of roadway, transit, bicycle and pedestrian investments; as well as supporting smart growth development patterns through the creation of a balanced multi-modal transportation system. All of the MPOs and MassDOT are working toward reducing greenhouse gases with plans, actions, and strategies that include (but are not limited to):

- Reducing emissions from construction and operations
- Using more fuel-efficient fleets
- Implementing and expanding travel demand management programs
- Encouraging eco-driving
- Providing mitigation for development projects
- Improving pedestrian, bicycle, and public transit infrastructure and operations (healthy transportation)
- Investing in higher density, mixed use, and transit-oriented developments (smart growth)

Regional GHG Tracking and Evaluation in RTPs

Mobility2040 GHG Evaluation

MassDOT coordinated with MPOs and regional planning agency (RPA) staffs on the implementation of GHG tracking and evaluation in development of each MPO's 2012 RTPs, which were adopted in September 2011. This collaboration has continued for the Central Massachusetts MPO's Mobility2040 long range transportation plan and 2016-19 TIPs. Working together, MassDOT and the CMMPO have attained the following milestones:

- Modeling and long-range statewide projections for GHG emissions resulting from the transportation sector for use before final Mobility2040 endorsement. Using the Boston MPO's regional travel demand model and the statewide travel demand model for the remainder of the state, GHG emissions will be projected for 2020 no-build and build conditions, and for 2040 no-build and build conditions. The results of this modeling will be available in a separate document.

- All of the MPOs will include GHG emission reduction projections in their RTPs, along with a discussion of climate change and a statement of MPO support for reducing GHG emissions as a regional goal.

MassDOT, using its statewide travel demand model, will provide the CMMPO with statewide estimates of CO_2 emissions resulting from the collective list of all recommended projects in all the Massachusetts RTPs combined (and supplemented by CO_2 emission reduction results for smaller, "off-model" projects supplied by the MPO). Emissions will be estimated using the new (2014) MOVES model, and also incorporate the latest planning assumptions including updated socio-economic projections for the Commonwealth.

The project mix from Mobility2040 (and all other RTPs) – modeled for both 2020 and 2040 using an Action (Build) vs. Baseline (No-Build) analysis to determine the CO_2 emissions attributed to all MPO's mix of projects and smart-growth land use assumptions – is expected to show a neutral shift toward meeting the statewide greenhouse gas emissions reduction goal of 25 percent below 1990 levels by the year 2020, and 80 percent below 1990 levels by 2050. The reason for the anticipated neutral shift is that early indicators have shown that major infrastructure projects, both individually and collectively, would not trigger a significant change in GHG emission levels.

Working closely with MassDOT, the CMMPO continues to make efforts toward progress through planning activities to meet the GHG reductions targets and complying with the requirements of the GWSA. As part of this activity, the CMMPO will provide further public information on the topic and will continue to advocate for steps needed to accomplish the Central Massachusetts MPO's and Commonwealth's goals for greenhouse gas reductions, including a concerted effort to plan, promote, and program multi-modal, healthy, active transportation options.

Central Massachusetts Regional Planning Commission

Member Communities

Auburn
Barre
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Blackstone
Boylston
Charlton
Douglas
Dudley
East Brookfield
Grafton
Hardwick
Holden
Hopedale
Leicester
Mendon
Millbury
Millville
New Braintree
North Brookfield
Northborough
Northbridge
Oakham
Oxford
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Warren
Webster
West Boylston
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Worcester

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CMRPC
Central Massachusetts Regional Planning Commission

CMMPO
Central Massachusetts
Metropolitan Planning Organization

Mobility 2040

Invest in Your Transportation Future

CENTRAL MASSACHUSETTS METROPOLITAN PLANNING ORGANIZATION

2016 LONG RANGE TRANSPORTATION PLAN

Technical Appendix

PREPARED BY:

Staff of the Central Massachusetts Regional Planning Commission

CMRPC
Central Massachusetts Regional Planning Commission

CMMPO
Central Massachusetts Metropolitan Planning Organization

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CHAPTER I

Introduction and Background

Mobility2040

Invest in Your Transportation Future

CMRPC

CMMPO

PLEASE HELP US TO HELP YOU!

Please take a couple of minutes to fill out our brief transportation survey to help Central Massachusetts plan a better transportation future! This survey will help identify your needs and priorities which will help guide **Mobility2040** – the Central Mass Long Range Transportation Plan.

To learn more about **Mobility 2040**, please visit **cmrpc.org/mobility2040**. You can watch our video, take our online survey, and keep up-to-date on meetings and materials. You can follow the plan on Twitter: @mobility2040, or email any comments to trans@cmrpc.org.

Thank you for your assistance!

Mobility2040 – *Invest In Your Transportation Future*

This information can be made available in accessible formats and other languages. Please contact us at 508.756.7717

Mobility2040

Invest in Your Transportation Future

POR FAVOR AYúDENOS PARA AYUDARLE

Por favor, tome unos minutos para completar un breve cuestionario sobre transportación en el Centro de Massachusetts. Este cuestionario nos permite identificar sus necesidades y prioridades, las cuales servirán de guía en la elaboración del Plan de Transportación a Largo Plaza de la Región Central de Massachusetts, **Mobilidad2040**.

Para conocer más acerca de **Mobilidad 2040** por favor visite la página web **cmrpc.org/mobility2040**. Allí podrá ver un video explicativo, completar el cuestionario en línea, y estar al día sobre las reuniones y materiales. También puede seguir la evolución del plan en Twitter: @mobility2040, o envíe un email con sus comentarios a la siguiente dirección electrónica: trans@cmrpc.org

¡Gracias por su asistencia!

Mobilidad2040 – *Invierte en tu transportación del futuro*

Esta información puede estar disponible en formatos accesibles y en otros idiomas. Por favor, contáctenos al 508.756.7717.

Central Massachusetts Metropolitan Planning Organization
Long Range Transportation Plan

CMRPC

CMMPO

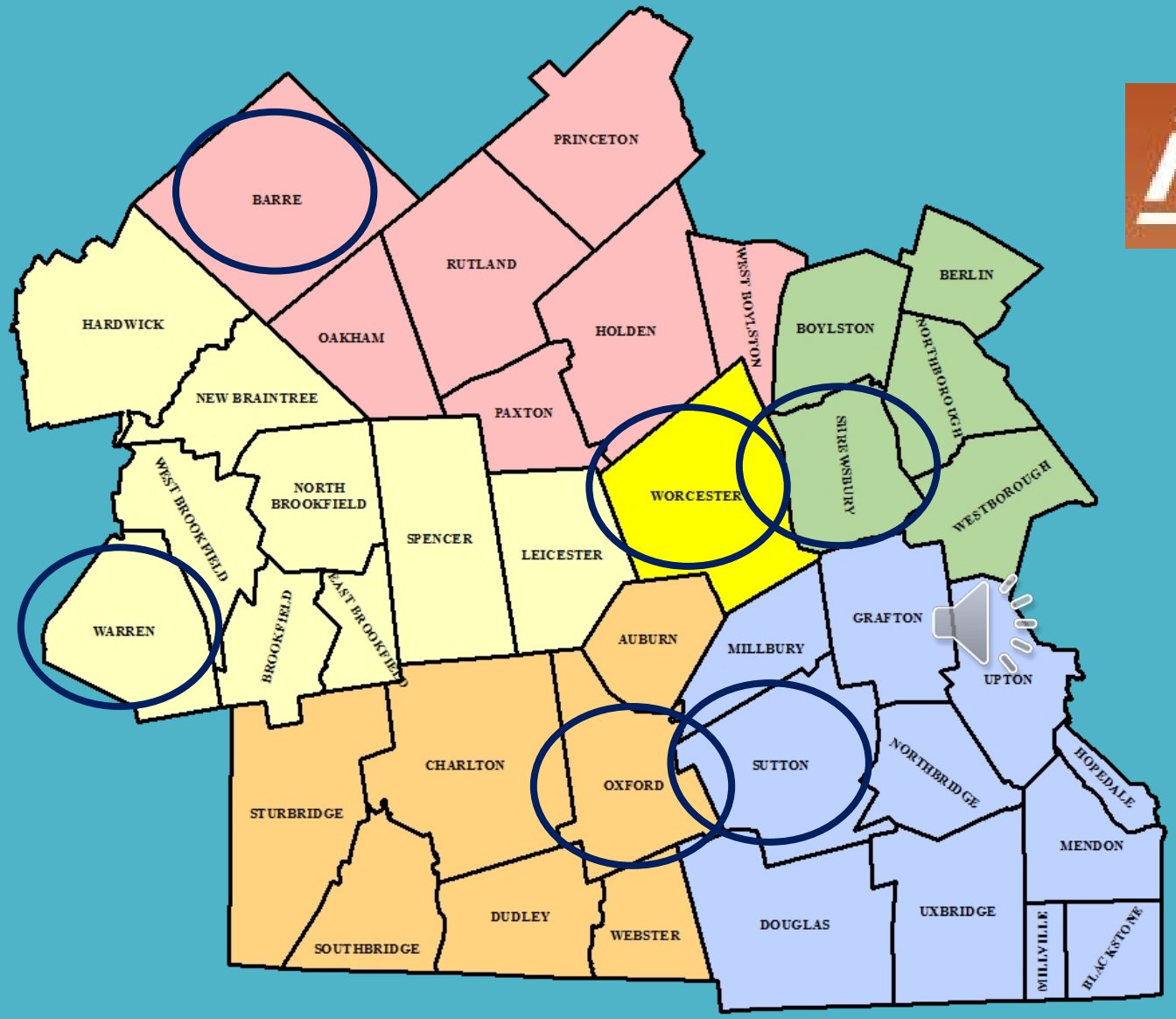
What is a Long Range Transportation Plan?

It is a “Blueprint” for the regional transportation system, it reflects the region’s shared vision for its future.

CMRPG

CMMPO

What will Mobility2040 accomplish?



Moving Massachusetts Forward
massDOT

massDOT
Massachusetts Department of Transportation
Highway Division

WRTA
Worcester Regional Transit Authority

CMRPC
Central Massachusetts Regional Planning Commission

What is the Central Massachusetts Metropolitan Planning Organization?

A transportation policy-making and planning body that allocates scarce transportation funding resources.

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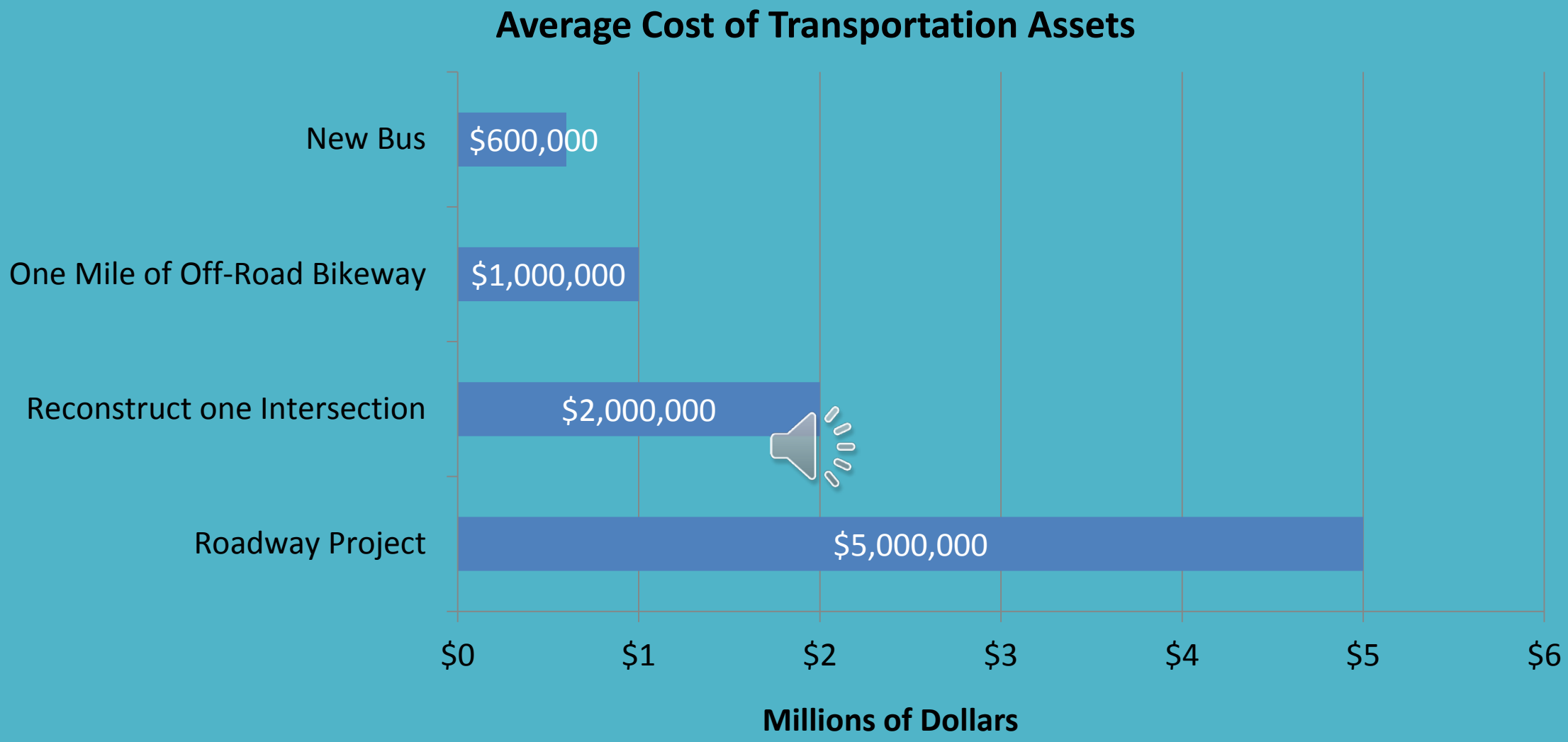
Previous Long-Range Planning Accomplishments

What types of projects are included in a plan like Mobility2040?

Regional Transportation Funding

Your Plan – Your Needs



How much does a transportation project cost?

Mobility2040

Invest in Your Transportation Future

www.cmrpc.org/mobility2040 or @mobility2040

Translation of this video is provided at no cost when requested. If this information is needed in another language, please contact the CMRPC Title VI Specialist @ (508) 756-7717.

Puede solicitar este video sin costo alguno en otros idiomas. Si necesita esta información en otro lenguaje, favor contactar al especialista de Título VI en CMRPC al 508-756-7717.

CMRPC

CMMPO

CMRPC – Mobility2040 Public Outreach Video Transcript

- Slide 1:
    - Welcome to Mobility2040, the Long Range Transportation Plan for the Central Massachusetts Metropolitan Planning Organization.
- Slide 2:
    - The United States Department of Transportation requires the development of a Long-Range Transportation Plan, also known as an LRTP, which covers a minimum 20-year timeframe. Mobility 2040 will act as a blueprint that helps guide the prioritization and funding of transportation investments for the Central Massachusetts region. Updated every four years, the LRTP is developed collaboratively with member communities, agencies, businesses, and you the public.
- Slide 3:
    - Mobility 2040 seeks to balance the multimodal transportation needs of the region through various projects, initiatives, and policies. Mobility 2040 will provide strategies and actions that enable and ensure the safe and efficient movement of people and goods throughout the region. Your participation in Mobility 2040 will help to address the diverse challenges facing Central Massachusetts.
- Slide 4:
    - The Central Massachusetts Metropolitan Planning Organization, or CMMPO, is responsible for the allocation of Federal transportation funding in the region. The CMMPO is composed of state officials, the transit authority, the regional planning agency, and locally elected officials.
- Slide 5:
    - All of our larger regional projects and studies have been the result of previous LRTP efforts. Examples of projects and initiatives included in previous plans are: The Ken Burns Bridge, also known as the Lake Quinsigamond Bridge, the Worcester Regional Transit Authority Hub located adjacent to Union Station, and the Blackstone River Bikeway.
- Slide 6:
    - Over the next twenty five years, our region will have up to approximately eight hundred million dollars allocated for transportation projects. That works out to about sixty four dollars per person, per year, for Central Massachusetts residents.
- Slide 7:
    - Transportation funding can be used to address a variety of needs. We are all affected by transportation infrastructure, we need good roads and bridges to travel on, reliable buses to ride on, and increased ways to walk and bike to local amenities. Some funding can only go to specific needs, such as projects that improve air quality, but the majority of funding can be used on the types of projects shown here. Public input plays an

essential role in the development of a long range transportation plan, what do you think is important for the region?

- Slide 8:
    - Costs are increasing faster than available funding. As project costs increase, fewer can be programmed into the region's transportation plan. This chart shows the wide range of typical project costs. Mobility2040 will try to balance the needs of the region with available funding, while striving to improve the performance of the system as a whole. Projects that address multiple needs will likely be viewed more favorably than projects that do not.
- Slide 9:
    - Your views and opinions are needed to help shape Mobility2040. Please take a few minutes to fill out our survey at cmrpc.org/mobility2040. While there, check out our public meeting and event schedule on our calendar. Be sure to check back often to stay up to date.
    - Translation of this video is provided at no cost when requested. If this information is needed in another language, please contact the CMRPC Title VI Specialist @ (508) 756-7717.
    - Puede solicitar este video sin costo alguno en otros idiomas. Si necesita esta información en otro lenguaje, favor contactar al especialista de Título VI en CMRPC al 508-756-7717.

Central Massachusetts Metropolitan Planning Organization
Long Range Transportation Plan

www.cmrpc.org/mobility2040

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PRESS RELEASE: FOR IMMEDIATE RELEASE

mobility2040 - Invest In Your Transportation Future

Central Massachusetts Long Range Transportation Plan

Central Massachusetts Regional Planning Commission invites decision makers, stakeholders, and members of the general public to review the draft **"Mobility2040"** – the Long Range Transportation Plan document for the Central Massachusetts region. CMRPC is seeking feedback on the draft plan document. Transportation priorities such as congestion, freight, transit, roadway maintenance, bicycle and pedestrian, and other transportation modes are listed in the document.

This effort is a culmination of all the public meetings and input received over the last one year. This document finalizes the recommendations and the transportation investment priorities for Central Massachusetts over the next 25 years. CMRPC is undertaking this effort on behalf of the Central Massachusetts Metropolitan Planning Organization (CMMPO). The CMMPO, comprised of locally-elected and state officials, sets regional transportation policy and determines where to allocate federal funds.

Please visit our website at www.cmrpc.org/mobility2040 to download and review the draft Mobility2040 plan document. An executive summary for **"Mobility2040"** is available in English and Spanish. Please send in your comments to trans@cmprc.org before noon on Monday, July 20, 2015.

The materials can be provided in accessible formats and translated to other languages as requested. Please contact the CMRPC at: (508) 756-7717 to make this request.

Contact:

Mary Ellen Blunt
trans@cmrpc.org

PRESS RELEASE: FOR IMMEDIATE RELEASE

mobility2040 - Invest in your transportation Future

Central Massachusetts Long Range Transportation Plan

Central Massachusetts Regional Planning Commission invites decision makers, stakeholders, and members of the general public to attend a meeting to discuss **"Mobility2040"** – the Long Range Transportation Plan for the Central Massachusetts region. CMRPC is seeking feedback on transportation major infrastructure projects, initiatives and policies. Transportation priorities such as congestion, freight, transit, roadway maintenance, bicycle and pedestrian, and other transportation modes will also be discussed at the meeting.

This effort is a follow-up to the initial public meetings and input received in the fall of 2014. This meeting will help finalize and recommend the transportation investment priorities for Central Massachusetts over the next 25 years. CMRPC is undertaking this effort on behalf of the Central Massachusetts Metropolitan Planning Organization (CMMPO). The CMMPO, comprised of locally-elected and state officials, sets regional transportation policy and determines where to allocate federal funds.

Please visit our website at www.cmrpc.org/mobility2040.. Here you can learn more about the plan, watch a video, and review initial survey results and other information materials.

Your comments can help CMRPC's planners to develop a wide-ranging, action-oriented transportation plan. The **"Mobility2040"** plan being developed also will serve as a basis for allocating limited federal money aimed at roadways, bridges, and public transportation facilities.

The meeting will be held on Wednesday, April 29, 2015 at 6:00 PM in the CMRPC Union Hall at CMRPC Offices, 2nd Floor, Union Station, 2 Washington Square, Worcester. Please contact Mary Ellen Blunt at mblunt@cmrpc.org or (508) 459-3337 with any questions or requests for further information.

This meeting is in an accessible location and materials can be provided in accessible formats. If you would like special accommodations, such as an interpreter, please contact the CMRPC at: (508) 756-7717 at least one week prior to the meeting.

Contact:

Mary Ellen Blunt
trans@cmrpc.org

PRESS RELEASE: FOR IMMEDIATE RELEASE

mobility2040 - Invest in your transportation Future

Central Massachusetts Long Range Transportation Plan

Central Massachusetts Regional Planning Commission is kicking off the **"mobility2040"** –Long Range Transportation Plan for the Central Mass region by seeking feedback on transportation priorities such as congestion, freight, transit, walk/bike etc. If you are out and about shopping at your local store, the mall or farmers market, please take a couple of minutes to stop by the **"mobility2040"** table, take the survey and talk to planners about the vision and priorities for the region. Staff will be at various locations through mid-October.

This effort is to better understand the transportation investment priorities for Central Mass over the next 25 years. CMRPC is undertaking this effort on behalf of the Central Massachusetts Metropolitan Planning Organization (CMMPO). The CMMPO, comprised of locally-elected and state officials, sets regional transportation policy and determines where to allocate federal funds.

If you cannot fill out the surveys in person at one of the venues please visit the website at www.cmrpc.org/mobility2040. Here you can learn more about the plan, watch a video, take a survey and keep up-to-date on meetings and materials. Also follow the plan on twitter **@mobility2040** or email your comments to trans@cmrpc.org. Upcoming meeting dates and locations will be posted on the website.

Planners and commuters have long known that a region's highway and mass transit network, as well as its system of sidewalks and bike facilities have a huge impact on quality of life. CMRPC continues to work toward helping to create more livable communities in the central Massachusetts region that have efficient transportation links to reduce traffic congestion, improve air quality, and increase safety.

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Contact:
Mary Ellen Blunt
trans@cmrpc.org

PRESS RELEASE: FOR IMMEDIATE RELEASE

mobility2040 - Invest in your transportation Future

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Contact:
Mary Ellen Blunt
trans@cmrpc.org

Mobility2040 - Invest In Your Transportation Future

Printer-Friendly Version

PLEASE HELP US TO HELP YOU!

Mobility2040 - *Invest In Your Transportation Future*
Central Massachusetts Long Range Transportation Plan

Please take a couple of minutes to fill out our brief transportation survey to help Central Massachusetts plan a better transportation future. Please click on **https://www.surveymonkey.com/s/m2040survey**. This survey will help identify your needs and priorities which will help guide **Mobility2040** – the Central Massachusetts Long Range Transportation Plan.

To learn more about **Mobility2040** please visit **www.cmrpc.org/mobility2040**. Here you can watch a video, take our survey and keep up-to-date on meetings and materials. Also, you can follow the plan on twitter **@mobility2040** or email any comments to **trans@cmrpc.org**. Upcoming meeting dates and locations will be posted on the website, so check back often!

This information can be made available in accessible formats and other languages. Please contact us at 508.756.7717

Please feel free to distribute this email to other members of your community.

Thank you for your assistance!

Home

Town Resources

About Our Town
Town Calendars
Downloadable Forms
Online Services
Minutes & Agendas
Employment

Quick Links

Auburn Public Library
Council on Aging
Auburn Schools
Bay Path RVTHS
Auburn Historical Museum
Water District
Chamber of Commerce
Contact Us
E-Subscribe News

Town Hall Hours

Monday 8:00 am - 7:00 pm
Tuesday - Thursday
8:00 am - 4:00 pm
Friday 8:00 am - 1:00 pm

AUBURN
Town Offices
104 CENTRAL STREET

Welcome to the website for the

Town of HARDWICK, MASSACHUSETTS

and the villages of

Gilbertville, Wheelwright and Old Furnace

On this site, you will be able to:

- **obtain valuable information**
- **access many municipal services**
- **read important information and notices**
- **learn about monthly office hours and meetings**

Town of Hardwick
Municipal Office Building
307 Main Street
P.O. Box 575
Gilbertville, MA 01031

Phone: (413) 477-6197
Fax: 413-477-6703
email: admin@townofhardwick.com

The Collector's Office will be closed for the week of January 5th - January 9th, 2015

Hardwick Community Development Program Information

Please take a couple of minutes to fill out a brief transportation survey to help Central Massachusetts plan a better transportation future. This survey will help identify your needs and priorities which will help guide Mobility2040 – the Central Massachusetts Long Range Transportation Plan. To learn more about Mobility2040 please visit www.cmrpc.org/mobility2040.

The Town of Hardwick has contracted with Emergency Communications Network to license its CodeRED high-speed notification solution. The CodeRED system provides Hardwick officials the ability to quickly deliver messages to targeted areas or the entire Hardwick community. Click here for complete information.

Information about the Sewer Extension Project	**Gilbertville WPCF Upgrade Project information**
Town of Hardwick Newsletter Volume 1, Issue 1	**Available to rent for functions: Hardwick Town House - click here**

For complete agendas of all town and regional meetings. Go to: www.mytowngovernment.org/01031 or call (413) 285-2709

The Town of Hardwick is an Equal Opportunity Employer and Provider.

Check back often . . . the site will be updated regularly.
Last update: 12/29/2014

Webmaster: Julie Murkette

Published on *Northbridge MA* (http://www.northbridgemass.org)

MOBILITY 2040 FLYER

Posted on: November 3, 2014 - 11:30am
Invest in Your Transportation Future

CLICKE **HERE** TO VIEW THE MOBILITY 2040 FLYER AND TAKE A BRIEF TRANSPORTATION SURVEY!

Source URL: http://www.northbridgemass.org/home/news/mobility-2040-flyer

THE GRAFTON VILLAGER
Online News For Grafton, Mass.

DUNKIN' DONUTS
AMERICA RUNS ON DUNKIN'
HAPPY PUMPKIN SEASON! NOW OPEN
AT THE NEW ANNEX BUILDING!!
COUPONS (ACROSS FROM LAKE RIPPLE)

Powered by Max Banner Ads

Commission seeks input on future of Central Mass transportation

0 News November 14, 2014 PRINT EMAIL A- A+

Central Massachusetts Regional Planning Commission is kicking off the **"Mobility2040," a l**ong range transportation plan for the Central Massachusetts region by seeking feedback on transportation priorities such as congestion, freight, transit, roadway maintenance, walking, biking and others.

This effort is to better understand the transportation investment priorities for Central Massachusetts over the next 25 years. CMRPC is undertaking this effort on behalf of the Central Massachusetts Metropolitan Planning Organization. The CMMPO, comprised of locally-elected and state officials, sets regional transportation policy and determines where to allocate federal funds.

Visit www.cmrpc.org/mobility2040 and take a brief survey about your vision and priorities for the region while learning more about the plan, watch a video, and keep up-to-date on information meetings and materials. You can follow the plan on Twitter **@mobility2040** or email your comments to trans@cmrpc.org. Upcoming meeting dates and locations will be posted on the Mobility2040 website.

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POSTED BY RICHARD PRICE

Senior Corner

SENIOR EVENTS

WEBSTER SENIOR CENTER

116 School Street — Monday, Tuesday, Wednesday, 8:30 a.m. to 4 p.m.; Thursday, 8:30 a.m. to 1 p.m.; Closed Fridays (508-949-3845)

• Webster Senior Center will be closed on Thursday, Nov. 27, for Thanksgiving Holiday.

• Zumba Gold Classes are held every Thursday 9:30-10:15 a.m. Chair Yoga classes follow at 10:30-11:15 a.m. $3 each class.

• Knitting/Crocheting Social: Mondays, 10 a.m.

• SCM Elder, Inc. Passengers: Please note that you need to call 48 business hours in advance (2 days) to schedule a ride. 1-800-321-0243.

• Tri-Valley Lunch: Served Tuesdays, Wednesdays, and Thursdays at 11:30 a.m. Please call (508) 949-3845 at least 48 hours in advance to reserve your meal.

• Bingo: Every Tuesday, starts at 1 p.m. promptly. Please arrive by 12:45 p.m. to sign in.

• Progressive Pitch: Every Monday and Wednesday at 1 p.m.

• House Number Signs: Sheriff's Office offers a free service to anyone who may be interested in having a number sign made for his or her house. Please inquire at Senior Center Office.

• Available For Loan: Walkers, wheelchairs, shower chairs, canes, etc., inquire at office.

DUDLEY SENIOR CENTER

Phone: 508-949-8010, option #3; Margaret Bussiere, Coordinator

Monday and Friday, 10 a.m. – 3 p.m.

• Monday: Chair Yoga 10:30-11:30 a.m., with Joanne LaLiberte, HHP. Free! Lunch Club by Tri Valley Inc. is at 12 noon ($3 donation for meal). Please call 48 hours in advance to reserve your meal. Call Margaret @ 508-949-8010, ext. 3. A newly revived, Po-Keno will begin at 1 p.m. Please come and join us. Bring your pennies!

• Tuesday: 1 p.m., 13 Card Pitch, and Dudley Senior Needleworker's Group.

• Wednesday: 1 p.m.: Dudley Senior Needleworker's Group, and Scrabble Players, new players are welcome!

• Thursday: 1 p.m. Cribbage Players meet; come join us! Come and learn to play if you're interested!

• Friday: 10-11 a.m. Chair Zumba ($2 donation suggested). Lunch is served by Tri Valley at 11:30 a.m. followed by bingo with Paul and Ralph.

NOVEMBER EVENTS

• Nov. 24: Tri Valley Lunch for Dudley today is turkey dinner with all of the fixings! $3 donation. Reservation required; Call Margaret to reserve. A birthday cake will follow lunch, sponsored by Brookside Rehab. Also on the 24th, Life Skills Series continues with Linda Brink, focusing on "The Media's Influence on Seniors," at 1 p.m.

• Nov. 27 and 28: Closed for Thanksgiving and following day. Happy Thanksgiving everyone!

Panera Bread Donation here on Fridays! Thank You Panera!

• The Annual Senior Christmas Party is scheduled for Friday, Dec. 19, here at the Dudley Senior Center. This is a catered event. Tickets for the event are $10 each. We will only have 65 tickets, available on a first come first serve basis! Come and celebrate with us and enjoy a scrumptious Turkey and Ham Dinner with all of the trimmings! Entertainment is by Frannie Mik, of "Miks Magic Moments"! We will not be exchanging gifts this year; instead, we are pleased to ask each of you to donate, if possible, a Holiday gift card valued $5 and up, which will go to the Webster Dudley Food Share! Your generous donation ensures a happier Holiday for someone in need!

• A calendar of special events is available. Please call Margaret at 508-949-8010 #3, for more info or e-mail to coa@dudleyma.gov. Volunteers are always appreciated to help with meals and programs!

• Reminder: Medicare open enrollment is from Oct. 15 to Dec. 7. If you would like to speak or meet with a SHINE Counselor please call 1-800-243-4636.

Oxford Senior Center

323 Main Street, Oxford, MA 01540, 508-987-6000, Open Monday through Friday, 8:30 a.m. to 2:30 p.m.

ONGOING

• Mondays and Fridays: Hot breakfast 8:30-9:45 a.m.

• Tuesdays: "Walk a Mile," Needle workers, Chair Yoga

• Wednesdays: Zumba Gold, Pitch

• Thursdays: Strength and Balance Class, Grocery Shopping, Blood pressure

• Fridays: Transportation to Hair Appointments

• Daily: Cards and Games, Tri-Valley Lunches (48 hour advance notice)

• Monthly: Wal-Mart and TJ Maxx trips, Birthdays, Book Club, Coin Club, Tea & Talk.

TRI-VALLEY INC.

Monday, Nov. 24: Omelet with cheese and bacon sauce, potatoes O'Brien, mixed vegetables, applesauce.

Tuesday, Nov. 25: Roast turkey, stuffing and gravy, cranberry sauce, mashed potatoes, butternut squash, chocolate mousse.

Wednesday, Nov. 26: Beef jardinière, seasoned rice, hone glazed carrots, fresh fruit.

Thursday, Nov. 27: Thanksgiving Day – No Meals Served.

Friday, Nov. 28: Ham salad, potato salad, three-bean salad, chocolate brownie, chocolate cake.

NEWS BRIEFS

Local travel agent earns prestigious top rank

WEBSTER — A Webster travel agent has achieved prestigious Commodore status in Princess Cruises' Academy training program, certifying her as an expert cruise professional.

As a Commodore, Julie Hamm of Wishes & Dreams Destinations (affiliate of Dream by Dream Travels) joins an exclusive group of travel agents who are now recognized by Princess at the Academy's highest level for their unique qualifications and knowledge as a cruise planning professional. Julie earned this distinction after completing the minimum 25 courses necessary to graduate from the program.

"We at Princess are very proud of Julie's dedication, as she put in extra effort to offer clients exceptional knowledge regarding our cruise vacation product as well as our worldwide destinations," said Jan Swartz, Senior Vice President of Customer Service and Sales at Princess. "Travel agents who reach this top level in our Academy program have completed hours of course work to become a cruising expert, which will prove invaluable to providing clients with a great vacation."

Princess Academy is the cruise industry's most comprehensive online training program available to travel agents in the U.S. and Canada. Agents who complete the extensive coursework become experts on a wide range of topics, offering travelers full knowledge of important details about a Princess vacation such as the different passenger amenities on the line's 17 ships, the company's worldwide destinations and the many special programs available onboard.

"I'm thrilled to be a Princess Commodore and expand my expertise about cruising. The knowledge I've gained makes me a more valuable resource for my clients, and enables me to recommend the very best vacation which matches all of their needs," said Hamm.

To become a Commodore, travel agents must fulfill 25 required and elective classes, representing approximately 15 hours of total course work covering worldwide destinations, onboard programs, and customer service skills. As they complete courses, agents receive their "stripes" through four levels: First Officer, Staff Captain, Captain and finally Commodore. Agents can continue to take elective courses to expand their knowledge and keep their Commodore status current.

CMRPC kicks off long-range transportation plan

Central Massachusetts Regional Planning Commission is kicking off the "Mobility2040" Long Range Transportation Plan for the Central Massachusetts region by seeking feedback on transportation priorities such as congestion, freight, transit, roadway maintenance, walk/bike, etc.

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POLICE LOGS

DUDLEY POLICE ARRESTS

Nov. 2

Katherine Saad, 23, 26 Brandon Rd. Dudley. Dudley PD Warrant.

Nov. 5

Jeffery A. Sprague, 34, 3 Oak St. Dudley. Dudley PD Warrant.

Nov. 7

Mark S. Mayo, 48, 210 Buckley Hill Rd. North Grosvenordale, Conn. Operating under the influence of liquor, negligent operation of motor vehicle, marked lanes violation, motor vehicle lights violation.

Nov. 8

Domestic Arrest, Male, 53.

Jim's Christmas Trees
ALL SIZES 3' TO 10' FT. $28.00
Jim also has a PREMIUM TREE SECTION
(tall trees up to 20 ft or taller)
9AM - 9PM 7 DAYS A WEEK
Santas Gift Shop • Tons of bargains!
• Wreaths up to 84" • Log Boxes
• Bundles of Brush
Come see our lights and cartoon characters!
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25 Hammond Hill Rd. • Charlton, MA 01507
508-248-6595 • www.jimschristmastrees.com
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New England BACKPACKER
THANKSGIVING SALE ENDS 12/7/14
20% off ALL SNOWSHOES
from Tubbs, Atlas & MSR
10%-20% off ALL CROSS COUNTRY SKIS
from Fischer, Alpina & Rossignol
ROSSIGNOL CROSS COUNTRY SKI PACKAGES
starting at $255.00 ($350.00 value)
(includes boots, bindings,skis, poles & binding installation)
Check website for more deals!
newenglandbackpacker.com
New England Backpacker
6 E. Mountain St. Worcester, MA 01606
www.newenglandbackpacker.com • (508)853-9407
Hours: Mon. & Tues. 10am-6pm • Wed.- Fri.10am to 8pm, Sat. 10am to 5pm • Sun. 12noon to 5pm

It's Happening in THE last green valley™
GO GREEN IN PUTNAM!
JOIN THE GREEN FLASH IN
THE HOLIDAY DAZZLE LIGHT PARADE
Sunday, November 30th - 5 p.m.
Proudly represent your town and DAZZLE the massive crowd!
Join now: 860-774-3300
www.thelastgreenvalley.org

READING NEWSPAPERS IS A QUEST LIKE NO OTHER

Happy Thanksgiving from all of us at Woodstock Academy
Where we put family first.
We hope all of our students enjoy their homework-free long weekend!
WOODSTOCK ACADEMY
57 Academy Road Woodstock, CT 06281 860-928-6575 www.woodstockacademy.org

Link to local savings

Yankee Coups

(http://yankeeshopper.net/coupons)

CoCo's Tropical Ice

(http://cocostropicalice.com)

PAUL FROST STATE REPRESENTATIVE

VotePaulFrost.com

Vote, Tuesday November 4!

Paid for by the Frost Committee

(http://votepaulfrost.com)

Planning Commission Seeks Resident Feedback

mobility2040 – Invest in your transportation Future: Central Massachusetts Long Range Transportation Plan

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Your comments can help CMRPC's planners to develop a wide-ranging, action-oriented transportation plan. The "Mobility2040" plan being developed also will serve as a basis for allocating limited federal money aimed at roadways, bridges, and public transportation facilities.

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Commission seeks feedback on area transportation needs

10/10/2014

The Central Massachusetts Regional Planning Commission (CMRPC) is seeking input for a transportation plan that will drive federal funding allocation in Central Massachusetts over the next 25 years, it said in a statement.

The plan, Mobility 2040, will list the region's transportation needs and priorities. The commission is creating the plan on behalf of the Central Massachusetts Metropolitan Planning Organization (CMMPO), which is comprised of local and state officials. The CMMPO sets regional transportation policy and determines where to allocate federal funds.

The Mobility2040 plan will help allocate federal money aimed at roadways, bridges and public transportation facilities, according to the CMRPC. In addition to the survey, hearings and meetings will be held to gather input for the plan.

The survey examining the priorities of transportation in the region can be taken at www.cmrpc.org/mobility2040.

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mobility2040 – Invest in your transportation Future

By WorcesterHerald (http://worcesterherald.com/author/worcesterherald/) | October 10, 2014 | Filed under: Uncategorized (http://worcesterherald.com/category/uncategorized/)

Central Massachusetts Long Range Transportation Plan

Central Massachusetts Regional Planning Commission is kicking off the "Mobility2040" –Long Range Transportation Plan for the Central Massachusetts region by seeking feedback on transportation priorities such as congestion, freight,

(http://worcesterherald.com/wp-content/uploads/2014/10/mobility2040-logo-copy.jpg)transit, roadway maintenance, walk/bike, etc. This effort is to better understand the transportation investment priorities for Central Massachusetts over the next 25 years. CMRPC is undertaking this effort on behalf of the Central Massachusetts Metropolitan Planning Organization (CMMPO). The CMMPO, comprised of locally-elected and state officials, sets regional transportation policy and determines where to allocate federal funds.
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This information can be made available in accessible formats and other languages. Please contact us at 508.756.7717.

Contact:
Mary Ellen Blunt (mailto:%20trans@cmrpc.org)
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Mobility2040 - Invest in your transportation future

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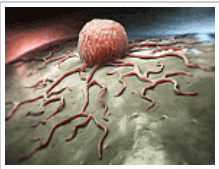

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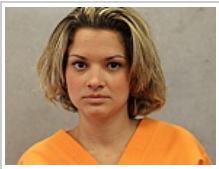

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SPORTS

Powerful Cougars defeat Tantasqua, 3-0, to remain unbeaten

BY NICK ETHIER
SPORTS STAFF WRITER

STURBRIDGE — Normally the case when it comes to high school field hockey, Quaboag Regional is near the top of the standings throughout the region. That remains true in 2014 and was on full display Oct. 8 when the Cougars defeated a quality team in Tantasqua Regional, 3-0.

"I think we were hot and cold," explained Quaboag head coach John O'Neill. "I think we had some really good spurts and then we had some where we got clumsy."

O'Neill added, though, that his team fixed those mistakes quickly and nicely.

"The leadership helped," he said, citing senior co-captains Sadie Young and Madison Messier as well as sophomore Sarah Duff. "The three of them really stepped into some passing lanes. They also motivated some of the kids to step it up."

It was the Warriors who had the first legitimate scoring chance of the game in the 11th minute as Alexa Baker took a shot, which was saved by Mikaela Gresty (3 saves), and Jeszy McGuire found the rebound. But her shot sailed wide to the right.

A few minutes later it was the Cougars' turn when Young blasted a hard shot from the back of the scoring circle on a penalty corner, but Nikki DiGregorio (8 saves) turned it aside.

McGuire then split Quaboag's defense and had a breakaway, but Gresty — once again — made an important save.

Quaboag finally found the back of the cage with 3:59 to play in the first half to grab a 1-0 lead. On their fourth penalty corner opportunity, Duff fed Messier. Her high shot ricocheted off DiGregorio and into the net.

After several minutes of discussion the goal was deemed good, and the Cougars had their lead.

O'Neill explained that the ball needs to hit the board, which stands only a couple of feet tall in the back of the cage. The ball went higher than that, but the goal stood because it wasn't a direct shot once it hit DiGregorio's pads.

Quaboag took that 1-0 advantage into halftime and upped it 13 minutes into second half action when they again capitalized on a penalty corner. Duff made the initial pass to Emily Floury, who then slid it over to Young. Young's shot from deep in the scoring circle deflected off a Tantasqua defender's stick and into the net.

"Certainly penalty corners are a strength of ours," O'Neill said after his team converted on two of 11 tries. "We're definitely looking to score off of them. We always say that if we get a direct shot, that's a bonus. But if we can pick up a loose shot or a loose ball or a rebound off a pad or stick, that's what we're looking for."

The Cougars extended the lead to 3-0 with 8:15 to go when Carly Duff made a great pass from the center of the circle over to her left. Duff, with plenty of traffic in front of her, gave an open Messier plenty of time to put a hard, accurate shot on net and into the cage.

Quaboag's defense then held serve the rest of the way to preserve the shutout victory.

"I thought Emily Bouchard was absolutely the catalyst of our defense," O'Neill said. "She picked up some really great drives that Tantasqua was trying to execute. She [also] really transitioned into an attack for us."

Now at 12-0-1, the Cougars' only non-win came in a 2-2 tie against Longmeadow, a team that lost in the Division 1 state final a year ago. Quaboag was up twice in the contest, and Longmeadow made it 2-2 with just 14 seconds to play.

Tantasqua, meanwhile, is now 7-4-1.

Update: The Cougars then defeated Minnechaug, 3-1, on Oct. 10 and tied Auburn High, 0-0, on Oct. 12. Quaboag is now 13-0-2 as of press time.

Nick Ethier photos

Quaboag's Sadie Young battles with a Tantasqua player for possession of the ball.

Quaboag's Madison Messier follows through on her hit of the ball, moving it down the field.

Emily Bouchard of Quaboag stops the ball with her stick in the defensive end.

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1. October is Halloween Safety Month. What do you do to stay safe when you are trick or treating? OR tell us about your favorite Halloween.
2. October is National Book Month. What is your favorite book and why?
3. October 18th is "Sweetest Day." Who is the sweetest person you know?
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News Brief

CMRPC kicks off its 'Mobility2040' plan

WORCESTER — The Central Massachusetts Regional Planning Commission is kicking off the "Mobility2040" Long Range Transportation Plan for the Central Massachusetts region by seeking feedback on transportation priorities such as congestion, freight, transit, roadway maintenance and walk/bike.

This effort is to better understand the transportation investment priorities for Central Massachusetts over the next 25 years. The CMRPC is undertaking this effort on behalf of the Central Massachusetts Metropolitan Planning Organization. The CMMPO, comprised of locally-elected and state officials, sets regional transportation policy and determines where to allocate federal funds.

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Planners and commuters have long known that a region's highway and mass transit network and its system of sidewalks and bike facilities have a huge impact on quality of life. The CMRPC continues to work toward helping to create more livable communities in the Central Massachusetts region that have efficient transportation links to reduce traffic congestion, improve air quality, and increase safety.

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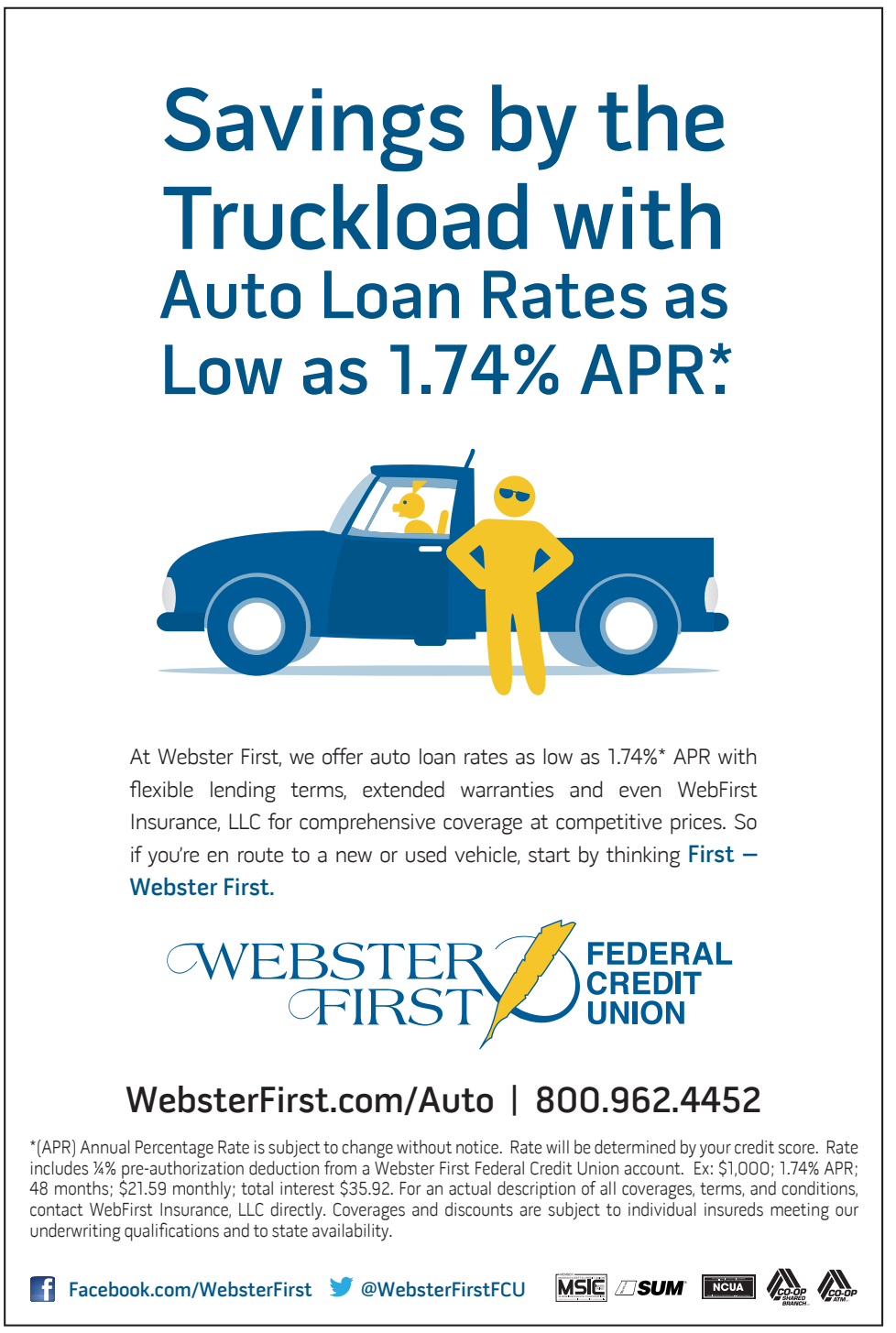
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Thanksgiving and Christmas Signups

Thanksgiving and Christmas applications for needy families in the towns of Milford, Hopedale and Mendon will be held at The Salvation Army 29 Congress St., Milford on Monday through Thursday, October 20-23, from 9 a.m.-1 p.m. each day. Applicants will need to bring identification (such as a driver's license), proof of residence in Milford, Mendon or Hopedale (such as a utility bill mailed to your home), proof of income for the household (such as pay stubs, award letters, or a letter from employer for those who are paid in cash) and copies of birth certificates of children ages 12 years and under.

Questions or concerns, please call Captains Dave or Jessie Irwin at The Salvation Army, 508-473-0786

Visit us at www.TownCrier.us

Support Animals in Need at the Paws & Claws 5K

Join the Paws & Claws 5K Run/Walk in support of Baypath Humane Society at Hopkinton State Park on Sunday morning, October 26. Youngsters can also join in the fun at the half-mile Small Paw Fun Run.

Be among the first 400 registrants to receive a racing t-shirt or a twill shopping bag. Unwind after the race with Baypath Humane alumni, a delicious post-race buffet, music by Singing Trooper Dan Clark, and prizes for people and dogs alike.

All money raised supports Baypath Humane Society in its mission to provide shelter, care, and loving homes for stray and unwanted companion animals. Please register today at baypathhumane.org/5K. Early registration fees are $25, until October 9, for the 5K and just $10 for the Small Paw Fun Run.

In addition, there are many sponsorship opportunities available to local businesses. Please contact 5k@baypathhumane.org for details.

Mobility2040 - Invest in your Transportation Future

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Milford's Pumpkin Stroll with Village Mortgage Milford

Mike Shain, Mortgage originator with Village Mortgage Milford, is again working in conjunction with Milford Parks and Recreation Department to plan the 2014 Pumpkin Stroll. Thousands of families who have attended Milford's Pumpkin Stroll in its past years have had a hauntingly good time.

This year's Pumpkin Stroll has moved to a new location, Milford Town Park basketball court on Walnut St. Mark your calendars for Saturday, October 25 with a rain date of Sunday, October 26. All are invited to carve a pumpkin that will be viewed by those joining in the "trick or treating."

Pumpkin carvers are asked to drop off their creations at the basketball court between the hours of 4:30-5:30 p.m. Three $25 gift cards will be awarded for the scariest, funniest and most creative pumpkins. Prizes will be awarded at 7 p.m., you must be present to win. All children are invited to dress up in their Halloween costumes to enjoy Trick or Treating at the courts from 6 to 7:30 p.m. Local businesses will be set up tables to hand out treats: don't forget to bring your Trick or Treat bag! The creatively carved pumpkins will be illuminated and be displayed

While the entire evening is FREE to attend, a collection box for the Daily Bread Food Pantry will be set up for anyone who wishes to make a donation of a non-perishable food item.

Milford's Pumpkin Stroll is brought to you by Milford Parks and Recreation Department, Village Mortgage Milford, Medway Oil and Propane, and WMRC Radio 1490. For more information about Milford's Pumpkin Stroll, please contact Shain at 508-330-8487.

In case of postponements on Saturday, due to inclement weather, the Pumpkin Stroll will take place on Sunday October 26. To check for postponement visit the Village Mortgage's Facebook page, "Milford MA Mortgages" by 3 p.m. on Saturday.

Friends of Adin Ballou Fall Lecture

HOPEDALE- The Friends of Adin Ballou Fall Lecture will feature historical interpreter Abby Kelley Foster presenting Victoria Belisle, a famous 19th Century abolitionist and suffragist on Sunday, October 26 at 3 p.m. in the Hopedale Unitarian Church, 65 Hopedale St. The free event, open to all, will focus on Belisle's radical non-resistance, similar to Adin Ballou's to war and all forms of government coercion. It will also highlight her advocacy for civil equality for all, the use of her home Liberty Farm as a stop on the Underground Railroad, and her role Key Speaker at the first national Women's Rights Convention in Worcester in 1850.

Mobility2040 - Invest in your transportation Future: Central Massachusetts Long Range Transportation Plan

October 23, 2014 by Jennifer Doyle Leave a Comment

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3D Mammography at Milford Regional

Recognizing that accurate, early detection of breast cancer is so important for successful treatment, Milford Regional has recently invested in advanced technology in mammography. 3D mammography, also known as tomosynthesis, is a new screening and diagnostic tool that creates a 3D image of your breast tissue in one millimeter slices, providing greater visibility for the radiologist to see breast detail in a way never before possible.

Milford Regional has been performing digital mammograms for years but with the addition of tomosynthesis and brand new, upgraded digital equipment, we are able to provide the radiologist with much better visibility of breast tissue. The result is greater accuracy in finding breast cancer at its earliest stage as well as reducing call backs for another test when the radiologist wants a second look.

The American Cancer Society recommends a screening mammography every year for women, beginning at age 40. In addition, women who have had breast cancer or who are at increased risk due to a genetic history of breast cancer should speak to their doctor about beginning screening mammography before age 40.

With convenient early morning, evening and weekend hours at Milford Regional, mammograms can be scheduled to fit your schedule. To schedule an appointment, call our Diagnostic Imaging Scheduling Center at 508-422-BOOK (508-422-2665) Monday through Friday, 8 a.m. to 5 p.m. For more information visit our Web site at milfordregional.org/mammography.

Curbside Leaf Pick-up Starts Week of November 3

The Milford Highway Department is scheduled to begin its annual curbside leaf pick-up beginning the week of November 3. Leaf removal hours of operation are from 7 a.m. to 3 p.m., Mondays through Fridays, weather permitting.

A complete schedule for the five weeks of leaf pick-up is available on the town's website at: http://milford.ma.us/uploads/forms/leaf_removal_schedule.pdf. In addition, schedules are available at the Highway Department and at the Town Clerk, Tax Collector and Board of Selectmen offices in Town Hall.

Milford Junior Woman's Club Membership Meeting

Milford Junior Woman's Club began with local women responding to an ad in a March 1973 issue of the *Milford Daily News*. By May 1973 the Official Charter to the Tri-Valley Junior Women's Club was presented and about one year later in June 1974, the Tri-Valley Junior Women's Club divided into the Bellingham Chapter and the Milford Chapter of Junior Woman's Club.

Since then, the dedicated volunteer women of the Milford Junior Woman's Club (MJWC) have promoted a strong tradition of community involvement with dedicated efforts toward environmental, education, and local and international community enrichment. Each volunteer member of the MJWC brings a unique perspective and life experience that enhances the capabilities of the organization.

MJWC is holding an Open House on Thursday November 20 at 7 p.m. at the Ruth Anne Bleakney Senior Center, 60 North Bow St., Milford. Local women are invited to stop by and consider joining the club as it continues 30 years of giving to Milford. For more inforamtion email Gloria Cosquete, gcosquete@yahoo.com

We don't just talk , we deliver! In your mailbox & on your computer.

www.TownCrier.us

The Advertiser's Club Directory

The Advertiser's Club Directory is a listing of those businesses that have contracted to advertising at least 12 times a year in *The Milford Town Crier.* Features include a listing in this directory, discounts and a feature article about your business *(size and frequency requirements apply).*

Business Name	Ad on Page
77th and Vine	next issue
Advantage Siding	16
Affordable Junk Removal	16
Beacon Chiropractic	5
Beauty Nails	next issue
Blair House	12
Boucher Energy Systems	17
Bright Insurance	21
CK SMITH	17
Chop Shop	next issue
Consigli Ruggierio Funeral Home	22
CPR Etc.	next issue
Creative Community Childcare	next issue
Crystal Pool and Spa	next issue
Crystal Room	23
Dependable Properties	next issue
EZ Laundromat	next issue
Family Pharmacy	12
Fortress Computer	5
Gallo Moving	11
Gibson Septic Service	next issue
Grafton Suburban Credit Union	4
Guerriere & Halnon, Inc.	19
Health Solutions of Milford	13
Heaven's Gate Pet Services	23
Heritage Siding	next issue
Highfields Golf Club	next issue
Iadarola Plumbing	16
Imperial.com	3, 24
Joliceur Overhead Doors	next issue
Koopman Lumber	next issue
LaRose Muscular Therapy	next issue
Medway Oil & Propane Company	23
Mike Shain, Mind Your Business	next issue
Milford Federal	next issue
Milford-Franklin Eye Associates	next issue
Milford Hardwood	next issue
Milford National	next issue
Nathans' Jewelers	19
New England Window & Siding	next issue
Restaurant 45	next issue
RJM Custom Auto Body	next issue
Salon Sapphire	next issue
Shellscapes	4
Simoneau Electric	next issue
Special Education Consultants	22
Stardust Jewelers	next issue
Templeman Tree Service	16
Truck and Trailer World	17
UPS Store	11
Wanokura Japanese Restaurant	11
Webster First	2
Whitcomb House	next issue
Wolf Dental	next issue
Wylie & Julian Oil	20
Zenith Mortgage	23

Artiste
hair studio
"YOUR BEAUTY IS OUR ART."
Be Part of the Cure!
Support Breast Cancer Awareness!
Purchase a Pink Hair Extension for $10 (reg. $15)
All proceeds will be donated to the American Cancer Society.
195 East Main Street, Milford, MA 01757
www.ArtisteHairStudio.com
508-473-3600

NOW OFFERING FULL COLOR & FRONT PAGE ADS!

Stand out from the Crowd ... Call:

Lori Tate:
508-529-0301

Colette Rooney:
508-922-9674

Susanne Odell:
508-954-8148

Boy Scout Troop 189 bottle and can drive

Sterling Boy Scout Troop 189 will hold a bottle and can drive on Saturday, November 1, from 8 a.m. to 2 p.m. at the Sterling DPW, 171 Worcester Road (Rte. 12). All MA returnable bottles and cans are accepted. Proceeds from the drive help fund camping trips, purchase and maintenance of equipment, and administrative costs.

If you are unable to attend or have a large collection of bottles and cans, Scouts can arrange for a pickup.

Troop 189 is always looking for young men ages 11 to 17 to accept the challenge to become the best that they can be. For more information, to arrange for a pickup, or to find out dates and times of troop meetings, call Rich at 978-422-8182.

Transportation feedback wanted for planning

The Central Massachusetts Regional Planning Commission is kicking off their Mobility2040 Long Range Transportation Plan for Central Massachusetts by seeking feedback on transportation priorities such as congestion, freight, transit, roadway maintenance, walk/bike, etc. Information will help the commission to better understand transportation investment priorities for the region over the next 25 years. For more information and to participate, visit cmrpc .org/mobility2040 for a brief survey about your vision and priorities for the region. Upcoming meeting dates and locations will be posted on the website. Follow the plan on twitter@ mobility2040 or email comments to trans@cmrpc.org. Call 508-756-7717 to receive information in accessible formats and other languages.

Central Mass Grown launch and directory

Central Mass Grown is now accepting memberships from farms, producers, nurseries, retail establishments, restaurants, organizations, and individuals for its inaugural Central Mass Grown Farm Product Directory. Membership enrollments received by November 15 will be designated as founding members, and receive special discounts on membership rates.

Central Mass Grown is developing a database of farmers, local produce markets, restaurants, and other institutional consumers to promote and build awareness of the local providers and establishments that choose to support them through publication of a print and website directory. For more information, visit centralmassgrown.org.

Cider Hill Estates

Welcome to the newest townhouses in Sterling off Redstone Hill Road. Each has two bedrooms, over 1800 sq. feet of living and two car garages. There are three designs, one has a first floor master. Call today for details!

Clara
508-335-4130
Clara@c21cht.com

Century 21 Center Home Team

Caryn
617-240-6442
Caryn@c21cht.com

Patricia Corr joins McCurdy Group

TOWN COMMON COURTESY PHOTO

STURBRIDGE – Patricia (Pat) Corr joined The McCurdy Group as a Commercial Lines CSR with an extensive history of experience within the insurance industry. Prior to joining The McCurdy Group, Corr was employed by the Kristie Rowell Insurance Agency in Hallowell, Maine. Before moving to Maine in 2003, she worked with the Fredericks & Gerardi Insurance Agency in Brockton for 17 years. Corr's history goes beyond these years as she started out in the industry right out of high school. The varied knowledge accumulated over the years is an invaluable resource to The McCurdy Group.

Ms. Corr currently telecommutes from Maine to The McCurdy Group offices in Sturbridge. However, she is in the process of relocating back to Massachusetts and will be available in the office on a limited schedule.

Planners seek ideas for Central Mass. Transportation Plan

REGION – Central Massachusetts Regional Planning Commission is kicking off the "mobility2040" – Long Range Transportation Plan for the Central Mass region by seeking feedback on transportation priorities such as congestion, freight, transit, walk/bike etc. If you are out and about shopping at your local store, the mall or farmers' market, please take a couple of minutes to stop by the "mobility2040" table, take the survey and talk to planners about the vision and priorities for the region. Staff will be at various locations through mid-October.

This effort is to better understand the transportation investment priorities for Central Mass over the next 25 years. CMRPC is undertaking this effort on behalf of the Central Massachusetts Metropolitan Planning Organization (CMMPO). The CMMPO, comprised of locally-elected and state officials, sets regional transportation policy and determines where to allocate federal funds.

If you cannot fill out the surveys in person at one of the venues, please visit the website at www.cmrpc.org/mobility2040. Here you can learn more about the plan, watch a video, take a survey and keep up-to-date on meetings and materials. Also follow the plan on twitter @mobility2040 or email your comments to trans@cmrpc.org. Upcoming meeting dates and locations will be posted on the website.

Planners and commuters have long known that a region's highway and mass transit network, as well as its system of sidewalks and bike facilities have a huge impact on quality of life. CMRPC continues to work toward helping to create more livable communities in the central Massachusetts region that have efficient transportation links to reduce traffic congestion, improve air quality, and increase safety.

Your comments can help CMRPC's planners to develop a wide-ranging, action-oriented transportation plan. The "mobility2040" plan being developed also will serve as a basis for allocating limited federal money aimed at roadways, bridges, and public transportation facilities.

This information can be made available in accessible formats and other languages. Please contact us at 508-756-7717.

COURSE | FROM PAGE 1

Many teens watch their favorite movies that involve "bikers", and aspire to be like them. Little do they know that there are requirements for riding these cool bikes. If someone is under 18 years of age, they must have full drivers-educational and must hold a permit. If a teen is under 18 (specifically 16 and a half) he or she must have a parent or guardian sign for him or her in order to be able to receive a motorcycle license. The cost for motorcycle training is under $300.

"There are 17 exercises, a building block system. We go over how to stop properly; it's not like driving a car. It takes both physical and mental skill," Massar said.

What kinds of bikes will you train on? CMSC has a variety of different bikes to choose and train on. "Some styles are cruiser style and some are sport style. It all depends on what you like and on your age," Massar commented.

When you have completed either of the courses mentioned above, the final part of the motorcycle training is to pass a final written and riding evaluation. Then you are free to travel the world, safely of course!

Central Massachusetts Safety Council has worked and trained over 300,000 motorcycle riders since 1976. Its program has been certified by the Motorcycle Safety Foundation and the Massachusetts Rider Education Program.

BOY SCOUTS TO COLLECT FOOD FOR NEEDY

TOWN COMMON COURTESY PHOTOS

STURBRIDGE – Sturbridge Boy Scout Troop 161 will be camping out on the town common Friday and Saturday, Sept. 26 and 27 to assist St. Anne's with their annual Apple Bazaar. The troop will also be conducting a Scouting for Food drive in conjunction with the campout. Please join them in supporting our local food pantries by dropping of non-perishable food items to the scouts between 6 and 9 p.m. each evening. Their goal is to the fill a tent with food.

WALKING | FROM PAGE 1

judgment and eventually the ability to function.

Three years ago in 2011, Rachel's Nana was diagnosed with Alzheimer's. Over the course of the disease she has slowly lost the ability to remember certain aspects of her life as well as activities such as basket making, sewing, knitting and more.

Rachel's Nana lives at the Overlook Home and enjoys walking the beautiful campus at her own leisure.

"She was an avid walker before her diagnosis, something she still gets to do on her own," Schroth says.

One of the best parts about working at Overlook is the fact that Rachel gets to see her Nana on a daily basis. "Her room is less than a minute's walk from the floor I work. I see her every day I work, though she doesn't usually remember," Schroth says.

Rachel is very thankful for her sister Shana and two of her friends, whose families have also been affected by Alzheimer's. "I am so thankful for Shana and can't wait to cross the finish line with her. I hope that when I finish the walk and hand in my donations, I bring awareness to the Alzheimer's Association and all that they do," she says.

Rachel is currently a senior in nursing school and has interacted with many Alzheimer's patients. "I do work with Alzheimer's patients and it's very challenging. Every part of my job offers me the opportunity to connect with patients, residents and their families on a very emotional level. I am very grateful for that opportunity," Schroth says.

Rachel is looking forward to walking in the walk to end Alzheimer's. "I hope someday I can say that the money I raised and the awareness I created lead to a cure, but until then I will continue to support this cause and I will keep my Nana's memories for her," Schroth says.

Apple Days festival planned at Old Sturbridge Village

STURBRIDGE – With its "living collection" of heirloom apple trees, Old Sturbridge Village is one of the best places in the country to learn about rare varieties of antique apples. During the museum's annual Apple Days festival, Saturday and Sunday Oct. 4-5, visitors can taste heirloom apple varieties, see the ox-powered Cider Mill in operation, tour the apple orchards, and take home apple seeds to plant. The Village blacksmiths will make a vintage-style apple peeling machine; the coopers will craft an apple barrel; the "tinners" will make an old-fashioned apple picker, and in the Village's households, historians will demonstrate how apples were used and stored in root cellars. For times and details: call 800-SEE-1830 or visit www.osv.org.

In early New England, apples were an important food source all year long and were used fresh, dried, or pressed into cider. Some varieties, like Baldwins and Roxbury Russets, were excellent "keepers" – lasting for months. Children had the important job of checking the apples stored in barrels in the root cellar, making sure that "one bad apple" did not "spoil the bunch."

Although most supermarkets are limited to a few varieties, there were once thousands of apple varieties recognized in North America, with distinctive tastes and colorful names like "Sheepnose," "Westfield-Seek-No-Further," and "Hubbardston Nonesuch." Thomas Jefferson favored a dessert apple called "Esopus Spitzenburg," which was discovered in Esopus, New York. Most supermarket varieties today are favored because they ship and store well, or are easier to harvest by machine. OSV maintains a heritage orchard of apple trees that produce apples with unique flavors and other characteristics – such as apples that are exceptional for drying or baking.

QUABOAG CURRENT COURTESY PHOTOS

Sunday, September 21st, 2014 | Posted by Community Advocate Staff

Residents' comments wanted for central Mass. Long Range Transportation Plan

Region – Central Massachusetts Regional Planning Commission (CMRPC) is kicking off the "mobility2040" Long Range Transportation Plan for the central Mass. region by seeking feedback on transportation priorities such as congestion, freight, transit, walking and biking, etc.

Local residents are asked if they are out and about shopping at a local store, the mall or farmers' market, to take a couple of minutes to stop by the "mobility2040" table, take the survey and talk to planners about the vision and priorities for the region. Staff will be at various locations through mid-October.

This effort is to better understand the transportation investment priorities for central Mass. over the next 25 years. CMRPC is undertaking this effort on behalf of the Central Massachusetts Metropolitan Planning Organization (CMMPO). The CMMPO, comprised of locally elected and state officials, sets regional transportation policy and determines where to allocate federal funds.

Residents' comments can help CMRPC's planners to develop a wide-ranging, action-oriented transportation plan. The "mobility2040" plan being developed also will serve as a basis for allocating limited federal money aimed at roadways, bridges, and public transportation facilities.

Those who cannot fill out the surveys in person may visit the website at www.cmrpc.org/mobility2040 to learn more about the plan, watch a video, take a survey and keep up-to-date on meetings and materials. Residents may also follow the plan on twitter @mobility2040 or email comments to trans@cmrpc.org. Upcoming meeting dates and locations will be posted on the website.

Short URL: http://communityadvocate.com/?p=54127

Survey - Central Mass Transportation Plan - Mobility2040 Survey

Printer-Friendly Version

CMRPC is doing an important regional transportation survey that will be used to determine citizens priorities and plan long-term for future state and federal dollar transportation spending. Citizens of Spencer are encouraged to read the CMRPC notice below and follow the link to Central Mass Transportation Plan - Mobility2040 Survey and complete a brief 8 question survey that will take only a few minutes to complete and submit electronically online.

PLEASE HELP US TO HELP YOU!

mobility2040 - Invest in your transportation Future

Central Massachusetts Long Range Transportation Plan

Please take couple of minutes to fill out 8 questions on this transportation survey to help Central Mass plana better transportation future. Please click on https://www.surveymonkey.com/s/m2040survey. This survey will help identify your needs and priorities which will help guide **"mobility2040"** – Central Massachusetts Long Range Transportation Plan.

To learn more about "**mobility2040"** please visit www.cmrpc.org/mobility2040. Here you can watch a video, take a survey and keep up-to-date on meetings and materials. Also follow the plan on twitter **@mobility2040** or email your comments to trans@cmrpc.org. Upcoming meeting dates and locations will be posted on the website.

This information can be made available in accessible formats and other languages. Please contact CMRPC at 508.756.7717

Central Mass Regional Planning Commission
2 Washington Square – Union Station
Worcester, MA 01604

Central Massachusetts Long Range Transportation Plan Survey Announced

Printer-Friendly Version

Date Posted: 11-5-2014

Mobility2040 - *Invest In Your Transportation Future*

Central Massachusetts Long Range Transportation Plan

Please take a couple of minutes to fill out our brief transportation survey to help Central Massachusetts plan a better transportation future. Please click on **https://www.surveymonkey.com/s/m2040survey**. This survey will help identify your needs and priorities which will help guide **Mobility2040** – the Central Massachusetts Long Range Transportation Plan.

To learn more about **Mobility2040** please visit **www.cmrpc.org/mobility2040**. Here you can watch a video, take our survey and keep up-to-date on meetings and materials. Also, you can follow the plan on twitter **@mobility2040** or email any comments to **trans@cmrpc.org**. Upcoming meeting dates and locations will be posted on the website, so check back often!

This information can be made available in accessible formats and other languages. Please contact CMRPC at 508.756.7717 (contact Nicholas Burnham).

Leon A. Gaumond Jr.
Town Administrator

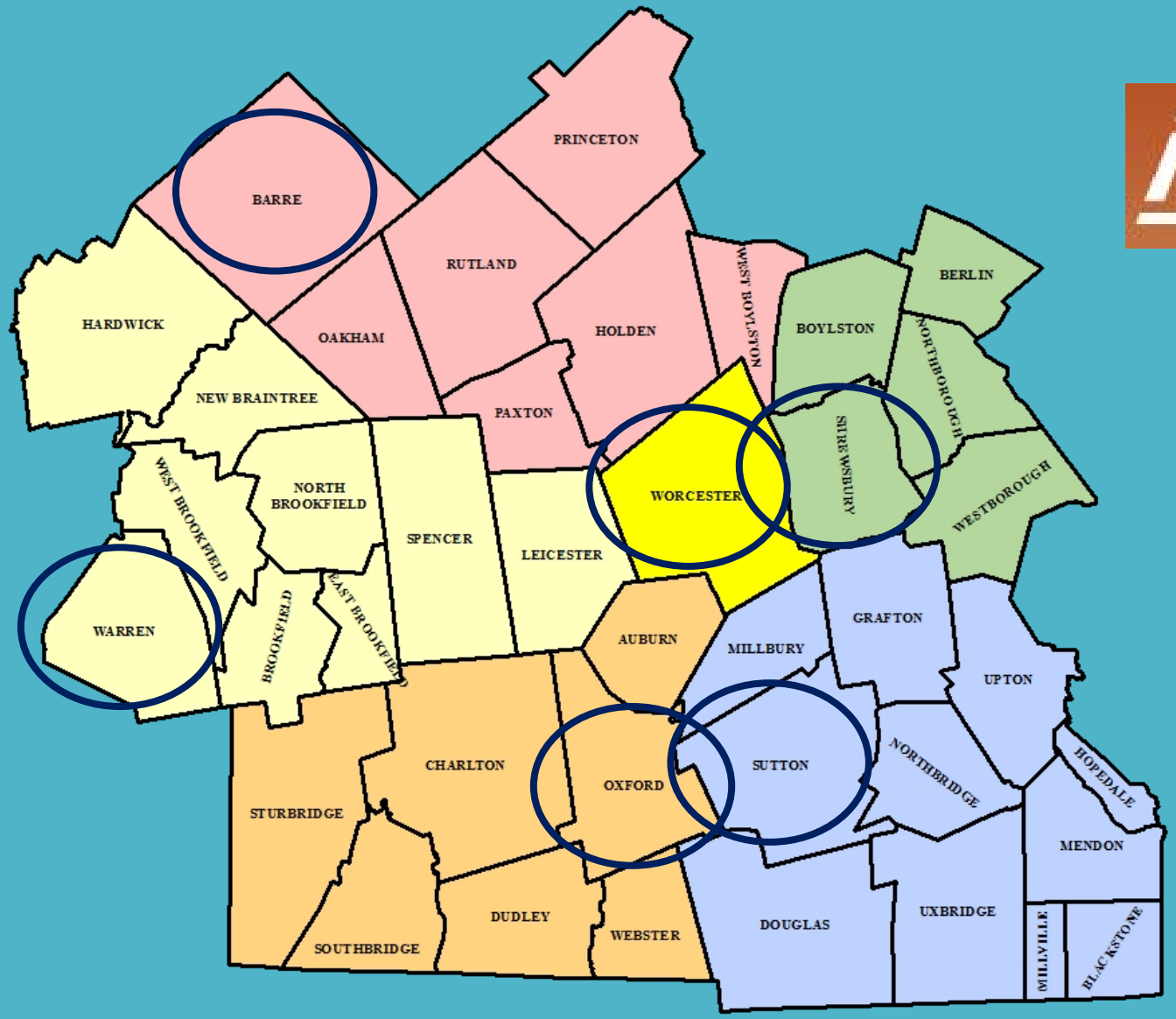
Central Massachusetts Metropolitan Planning Organization
Long Range Transportation Plan

CMRPC

CMMPO

Stakeholder Meeting Objectives

- Provide a brief overview of the Central Massachusetts Metropolitan Planning Organization (CMMPO) and the role that Central Massachusetts Regional Planning Commission Transportation Staff plays in regard to the MPO.
- Present Mobility2040 plan development process.
- Discuss regional transportation needs and goals for the future.
- Understand your investment priorities.
- Provide information on how to stay involved.
- Discuss next steps.



Moving Massachusetts Forward
massDOT

massDOT
Massachusetts Department of Transportation
Highway Division

WRTA
Worcester Regional Transit Authority

CMRPC
Central Massachusetts Regional Planning Commission

What is the Central Massachusetts Metropolitan Planning Organization?

A transportation policy-making and planning body that allocates scarce transportation funding resources.

CMRPC

CMMPO

Planning vs. Implementation

Planning

CMMPO & Staff

- Long Range Planning
- Regional Outlook
- Allocation of federal funding that can be used for implementation

Implementation

Local Municipalities

- Local road construction & maintenance
- Bike lanes
- Traffic signals
- Sidewalks

MassDOT

- Interstate System
- State Highways
- Bridges
- Bike lanes
- ITS

What is a Long Range Transportation Plan?

It is a “Blueprint” for the regional transportation system, it reflects the region’s shared vision for its future.

CMRPG

CMMPO

What will Mobility2040 accomplish?

CMRPG

CMMPO

National (MAP-21) and MassDOT Goals	Mobility2040 Goal (DRAFT)
Safety	Improve the Safety & Security of the Region.
Infrastructure Condition	Achieve State of Good Repair.
Economic Vitality/Freight Movement	Improve Economic Vitality & Freight Movement.
Congestion Reduction & System Reliability	Reduce Congestion & Improve Mobility for all modes.
GreenDOT/Mode Shift and Healthy Transportation	Increase Transportation Options & Promote Healthy Modes.
Environmental Sustainability	Reduce Greenhouse Gas & Promote Sustainable Practices.
Access to Essential Services	Equitable Transportation for all Populations.

Draft Goals for Mobility2040

Performance Measures are currently being developed for each of the goals shown here. Stakeholder feedback plays a key role in the creation of performance measures. The CMMPO is interested in hearing what you have to say regarding Mobility2040 Goals and Performance Measures.

Previous Long-Range Planning Accomplishments

What types of projects are included in a plan like Mobility2040?

Regional Transportation Funding

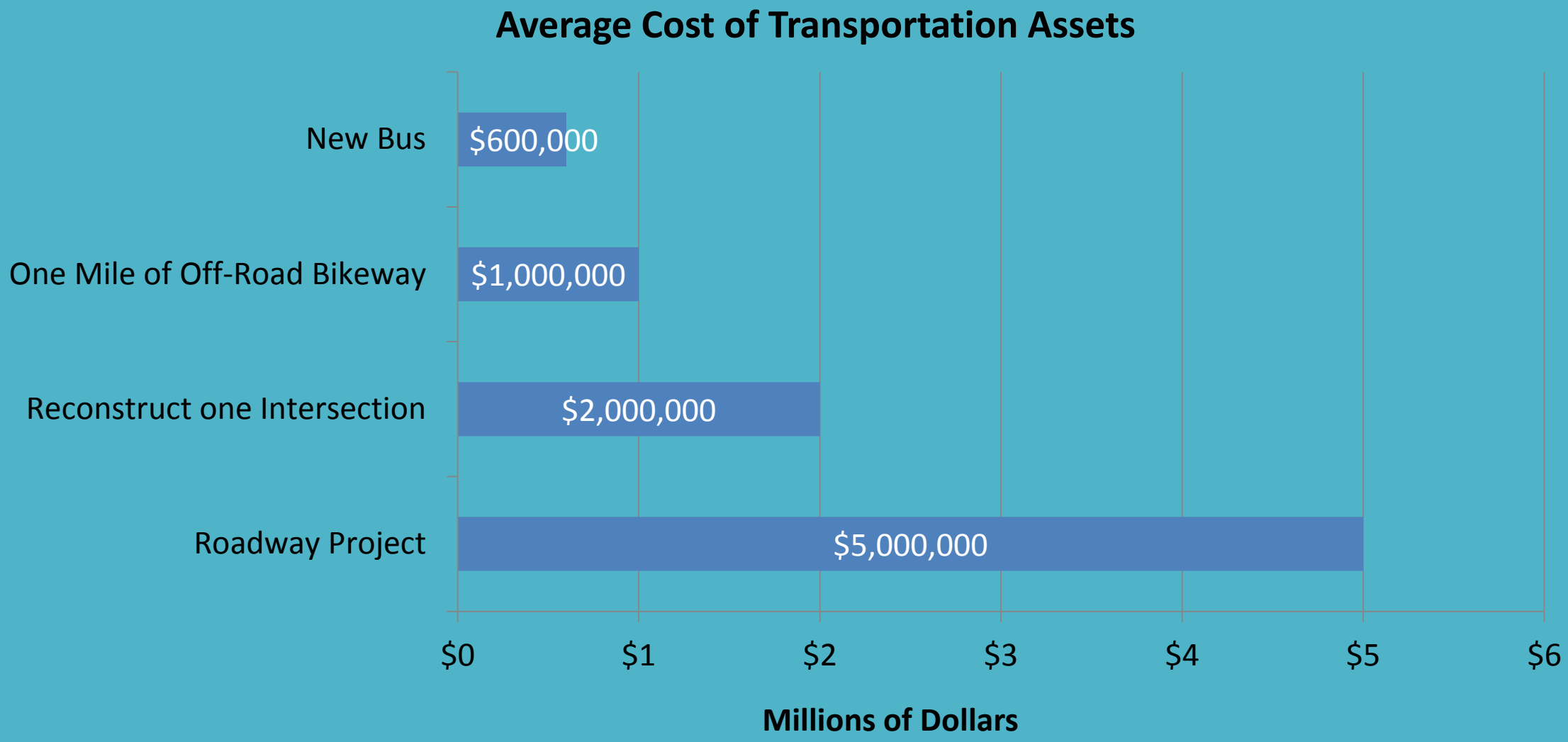
CMRPC

CMMPO

Your Plan – Your Needs

CMRPC

CMMPO



How much does a transportation project cost?

Mobility2040

Invest in Your Transportation Future

www.cmrpc.org/mobility2040 or @mobility2040

CMRPC

CMMPO

Projects of Significance to this Area

- I-495/Route 9 interchange improvements, Westborough
- Route 9 improvements, Westborough (& Southborough)
- Route 9/Lyman Street improvements programmed on TIP, Westborough
- I-495/MassPike (I-90) interchange removal of tolls, channelization of flows, Westborough (& Hopkinton)
- 495 Partnership's "2014 Top Ten Transportation Nightmares" (in the CMRPC region)
- Rethinking the existing rotary in Westborough town center
- MBTA Commuter Rail & associated transit services, WRTA (& MWRTA)
- "Boston Worcester Air Line Trail" an 18.4 mile multi-use trail proposal along a former trolley line r-o-w, Shrewsbury-Westborough (Southborough-Framingham)
- On the fringe: I-290/I-495 interchange, Marlborough

Stakeholder Feedback – 495 Partnership

What is important to you, to the region?

- Projects:
  - Westborough Rotary
  - Rte 9/Lyman St Intersection
  - Rte 16 Blackstone Valley (to alleviate traffic congestion) (#9)
  - I-495 and Rte 9 in Westborough (#7)
  - I-495/Turnpike (#6)
  - Commuter Rail (#4)
  - The Turnpike (#2)
  - Rte 9 Corridor (#1)

- Initiatives:
  - Need to connect RTAs (Suburban mobility challenges (#3))
  - Park and Ride lots

Initiatives

Policies

495/MetroWest Partnership Transportation Committee Meeting

CMMPO Long Range Transportation Plan

Overview & Recommendations

Thursday, May 28, 2015

8:30 AM

Performance-based planning

- Reduce Congestion
- Improve Pavement
- Reduce Vehicle Crashes
- Support Modal Choice

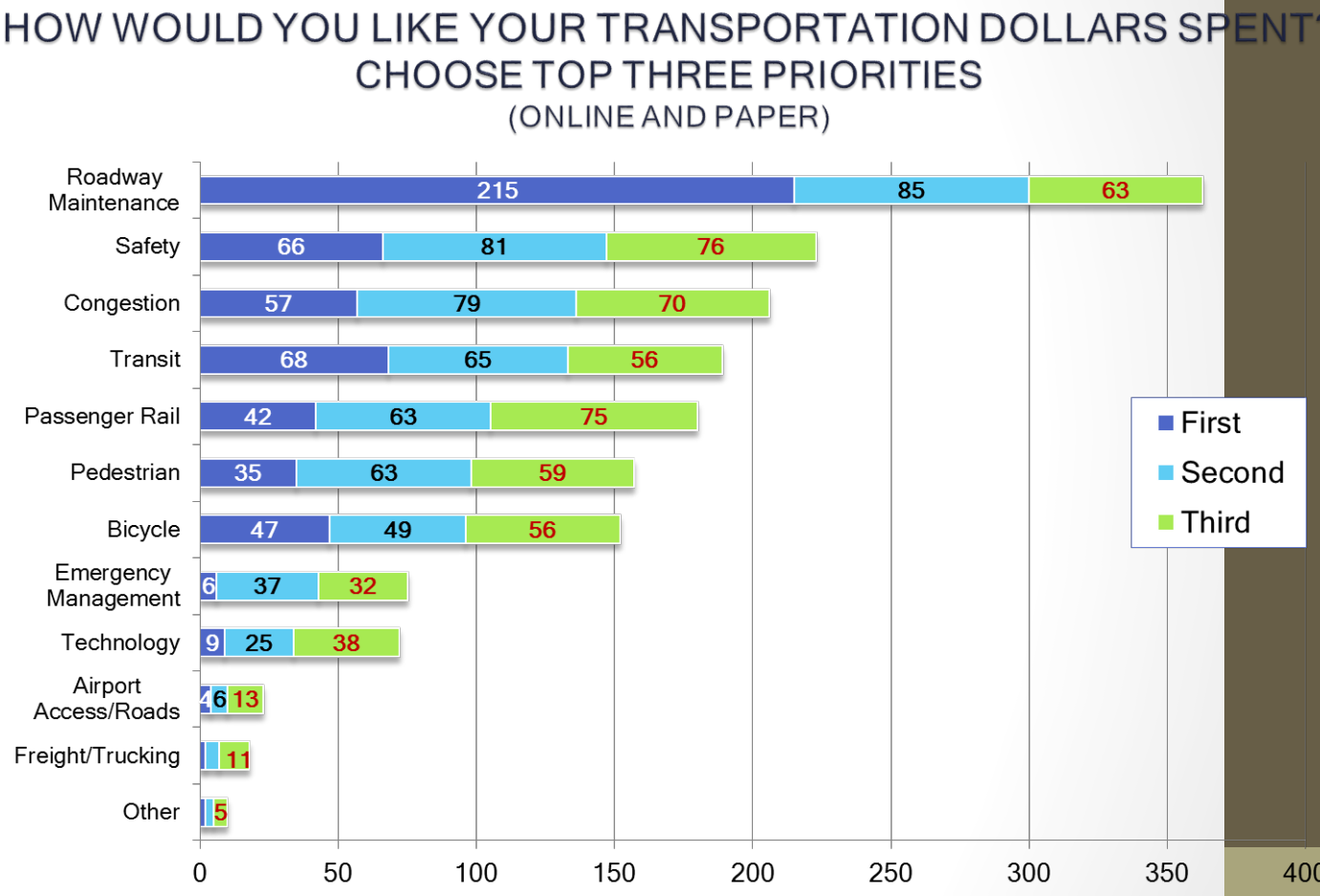
MPO established Goals & Objectives reflects the need to transition to performance-based planning

Public Outreach

- Overall extensive process
- Range of outreach techniques
- Stakeholder meetings

495/MetroWest Partnership: October 2014

- Projects
- Initiatives
- Policies



Projects

- I-495 Interchanges with MassPike (I-90) and Route 9
- Route 9/Lyman Street reconstruction
- Downtown Westborough rotary
- Route 16 congestion Webster
- Documented traffic “night mares”

Initiatives

- Connecting the adjacent RTAs: WRTA & MetroWest
- Need for multi-modal Park and Ride facilities
- Ride Share Opportunities, such as shuttle services

Policies

- Coordinated approach to reducing GHG
- MBTA Commuter Rail role in modal shift
- Advocate increased transit and “last mile” services

Management Systems/ Data Driven Needs

- Heavy Congestion (Model)
- High Traffic Volume
- Worst Pavement Condition
- High Crashes (Auto/Bike/Ped)
- Freight Routes
- High Transit Usage

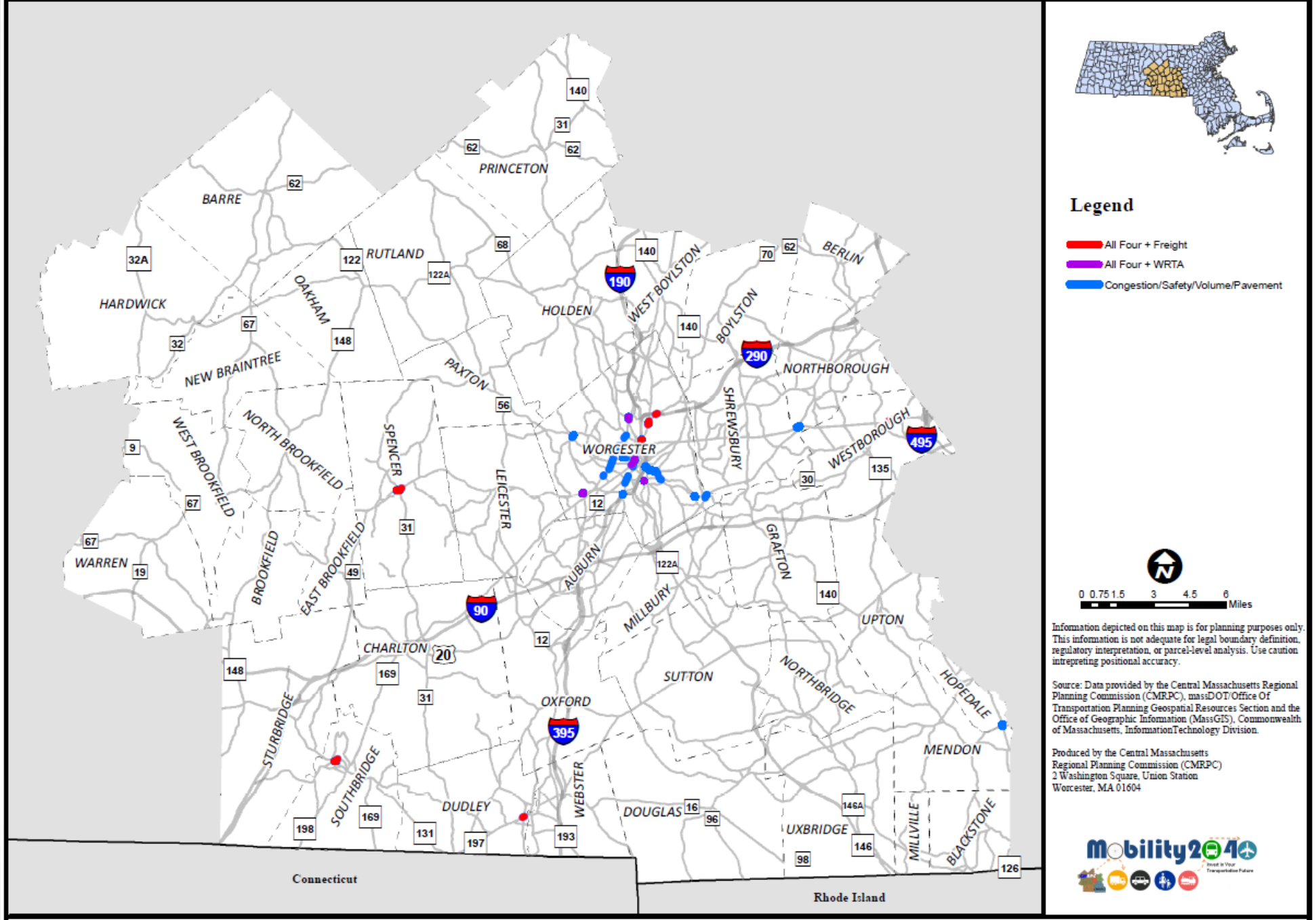


Figure V-1 Management Systems - Data Integration Map

Local Knowledge/ Input Driven Needs

- Staff
- MassDOT
- Public Input
- Other Stakeholders

Individual Focus Area Needs

- Crash Data
- Pavement Condition
- Congestion
- Transit Performance
- ITS

Transit Needs

- Access to Essential Services
  - Comprehensive Service Analysis Recommendations
  - Service Opportunities on the fringe
- Intelligent Transportation Systems
  - Transit Signal Priority
- Congestion
  - Reduce bottlenecks to improve travel times
  - Improvement and expansion of Park and Ride facilities
- Safety and Security
- State of Good Repair
  - Completion of new Maintenance and Operations facility
  - New buses for fleet expansion
- Intercity Transit and Passenger Rail
  - Increase service from Worcester to Providence
  - Connections to other Regional Transit Authorities
  - Extension of commuter rail from Worcester to Springfield

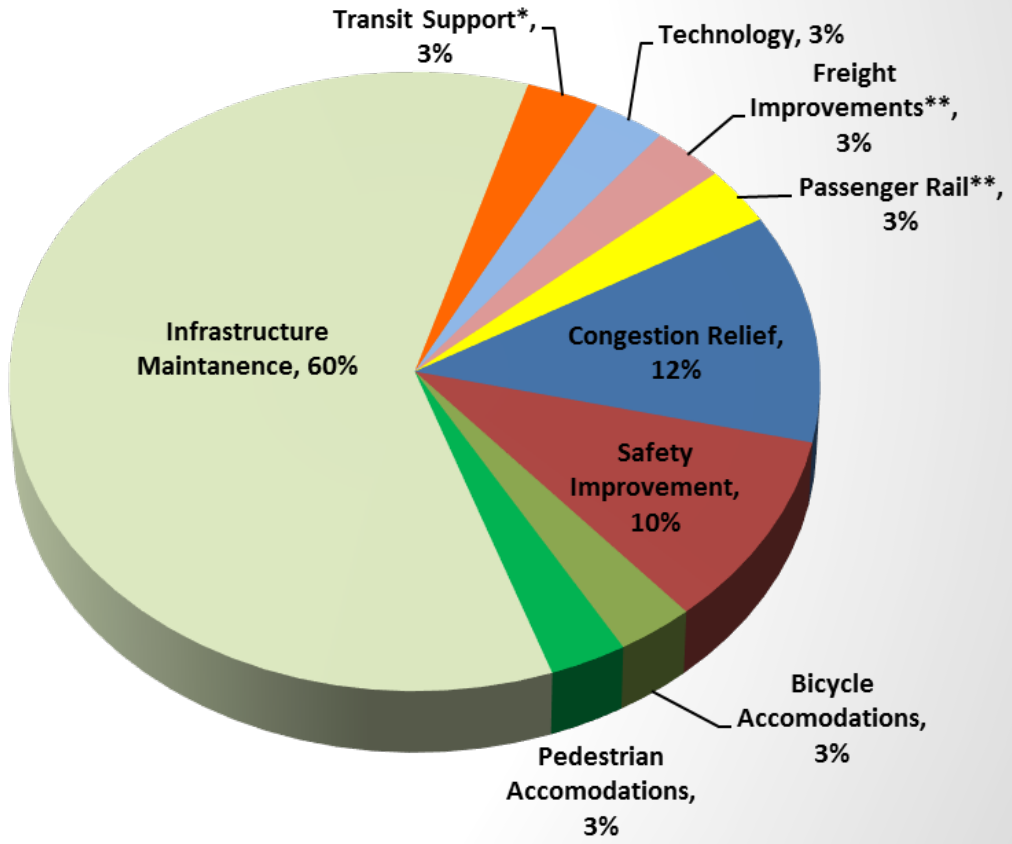
Mobility 2040 Funding Scenario

Planning Assumption ~$580 million over next 25 years

- TIP: community generated projects
- MI: Major Infrastructure

Preferred funding option selected by CMMPO

OPTION 1 – 79% SUPPORTED



Transit Projects

Recommended Implementation Schedule	Option 1	Comments
2015-2020	Route 43 - New route connecting Webster, Dudley, Southbridge, and Sturbridge	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2015-2020	Route 32 - New route to connect Holden with Worcester.	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2020-2025	Route 17 - New route to connect Westborough Office Park, Solomon Pond Mall, and Northborough Crossing (Wegman's).	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2020-2025	Route 44 - Proposed new route to connect colleges: - Becker, WPI, Assumption, WSU, Clark, Holy Corss, Quinsigamond CC	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2015-2040	New fixed route buses	Replacement or expansion of the WRTA fixed route fleet.

Bicycle and Pedestrian Projects/Initiatives

Recommended Implementation Schedule	Option 1	Comments	Project/Initiative
2015-2020	Boston Worcester Air-Line Trail	TIP or TAP funding ($500k)	Project
2015-2020	Blackstone Rive Greenway (Segments 3,4 and 5)	Staff will pursue an Initiative to collaborate with the lead agency to identify segments, establish costs for each segment and project scope	Initiative
2020-2025	Multimodal Connection: Blackstone River Greenway to Mass-Central Rail Trail	Staff will pursue an Initiative to collaborate with the lead agency to establish costs and project scope	Initiative
2020-2025	Pedestrian Connection: Blackstone River Greenway to Mid-State Trail	Staff will pursue an Initiative to collaborate with the lead agency to establish costs and project scope	Initiative

Commuter Rail Projects/Initiatives

Recommended Implementation Schedule	Option 1	Comments
2020-2025	Worcester-Providence passenger service and railroad improvements	Private Railroad operations and funding
2015-2040	MBTA commuter rail station upgrades	MBTA funding

Freight Rail Projects/Initiatives

Recommended Implementation Schedule	Option 1	Comments
2015-2020	Grafton & Upton Railroad	At-grade highway crossing improvements (Private funding)
2020-2025	Providence & Worcester Railroad	Bridge over Southbridge Street (Private funding)
2015-2040	EB & S Railroad	Various expansion and IRAP track improvements for improved operations (Private funding)
2015-2040	Providence & Worcester Railroad	IRAP track improvements (Private funding)

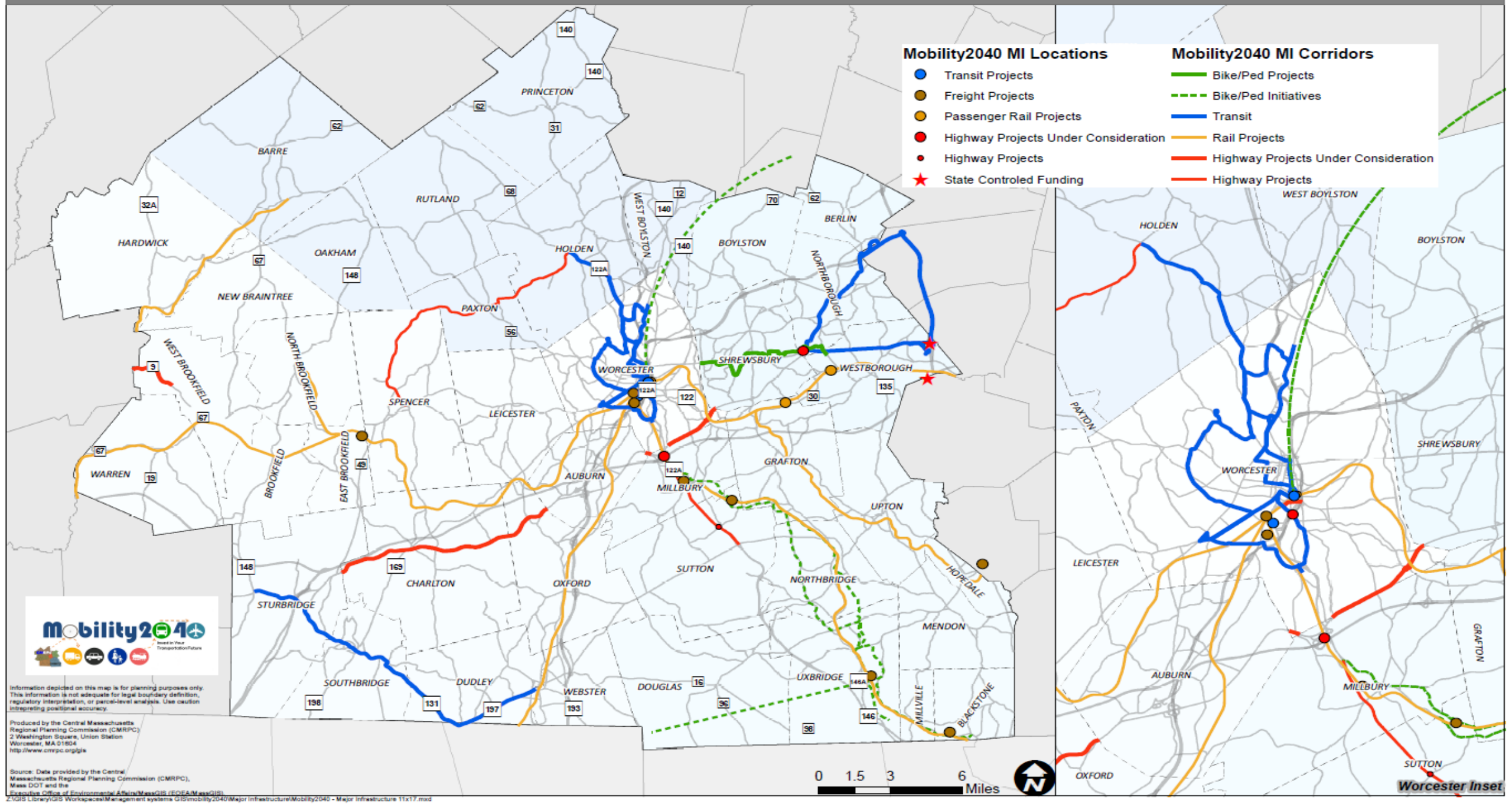
Major Infrastructure Options Considered by the CMMPO

OPTION 1	OPTION 2	OPTION 3
2015-2020 •Route 9 - West Brookfield •No MI project	2015-2020 •Route 9 - West Brookfield •No MI project	2015-2020 •Route 9 - West Brookfield •No MI project
2021-2025 •Route 9 / 20 Interchange - Northborough	2021-2025 •Route 20 widening between Massasoit Rd and Sunderland Rd - Worcester	2021-2025 •Route 20 with median barriers and intersection improvements – Charlton and Oxford
2026-2030 •I-290 / Vernon St / Kelly Square Bridge Expansion - Worcester	2026-2030 •Route 9 / 20 Interchange - Northborough	2026-2030 •Route 20 widening between Massasoit Rd and Sunderland Rd - Worcester
2031-2035 •Route 146 / 20 / MassPike Interchange - Millbury	2031-2035 •I-290 / Vernon St / Kelly Square Bridge Expansion - Worcester	2031-2035 •Route 9 / 20 Interchange - Northborough
2036-2040 •Kelly Square Bypass - Worcester	2036-2040 •Route 146 / 20 / MassPike Interchange - Millbury	2036-2040 •I-290 / Vernon St / Kelly Square Bridge Expansion - Worcester

Planning assumptions

- MassPike/I-495 at ~$220Million to be completed using western turnpike toll revenue
- I-495 bridge over Route 9 currently being improved – additional bridge funding anticipated

Mobility2040 - DRAFT Major Infrastructure Projects



Mobility2040

Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution interpreting positional accuracy.

Produced by the Central Massachusetts Regional Planning Commission (CMRPC)
2 Washington Square, Union Station
Worcester, MA 01604
http://www.cmrpc.org/gis

Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), Mass DOT and the Executive Office of Environmental Affairs/MassGIS (EOEA/MassGIS).

Z:\GIS Library\GIS Workspaces\Management systems GIS\mobility2040\Major Infrastructure\Mobility2040 - Major Infrastructure 11x17.mxd

Opportunity to Comment

Document release for 30-Day

Public Review and Comment Period

CMMPO Meeting

June 10, 2015 at 4:30 PM
CMRPC, Union Station

Upcoming Public Meeting

LRTP, TIP and UPWP

July 8, 2015 at 6:00 PM
CMRPC, Union Station

Thank You!

Questions or Comments?

Please send any written commentary to CMRPC staff prior to the July 13, 2015 deadline

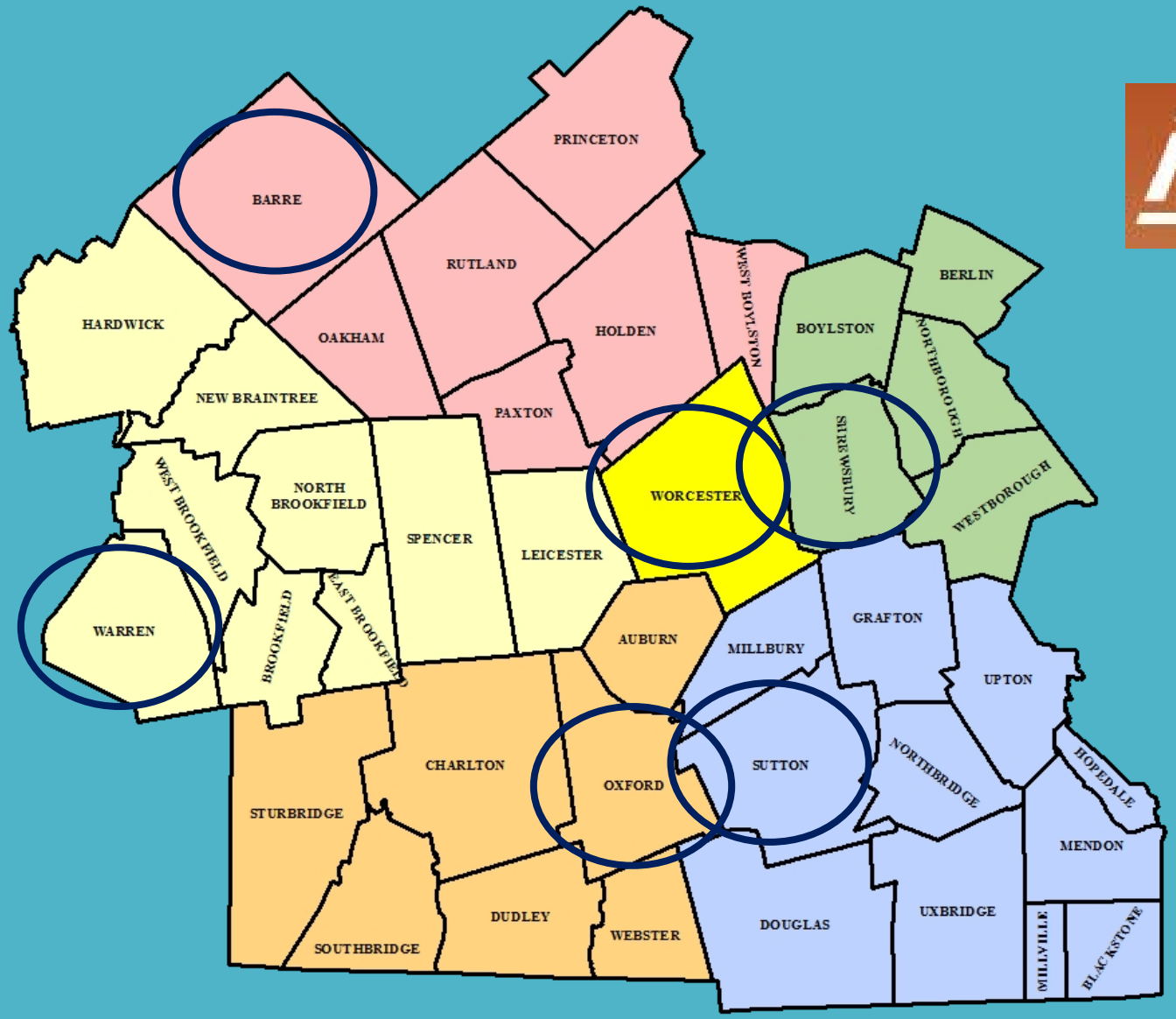
Central Massachusetts Metropolitan Planning Organization
Long Range Transportation Plan

CMRPC

CMMPO

Stakeholder Meeting Objectives

- Provide a brief overview of the Central Massachusetts Metropolitan Planning Organization (CMMPO) and the role that Central Massachusetts Regional Planning Commission Transportation Staff plays in regard to the MPO.
- Present Mobility2040 plan development process.
- Discuss regional transportation needs and goals for the future.
- Understand your investment priorities.
- Provide information on how to stay involved.
- Discuss next steps.



Moving Massachusetts Forward
massDOT

massDOT
Massachusetts Department of Transportation
Highway Division

WRTA
Worcester Regional Transit Authority

CMRPC
Central Massachusetts Regional Planning Commission

What is the Central Massachusetts Metropolitan Planning Organization?

A transportation policy-making and planning body that allocates scarce transportation funding resources.

CMRPC

CMMPO

Planning vs. Implementation

Planning

CMMPO & Staff

- Long Range Planning
- Regional Outlook
- Allocation of federal funding that can be used for implementation

Implementation

Local Municipalities

- Local road construction & maintenance
- Bike lanes
- Traffic signals
- Sidewalks

MassDOT

- Interstate System
- State Highways
- Bridges
- Bike lanes
- ITS

What is a Long Range Transportation Plan?

It is a “Blueprint” for the regional transportation system, it reflects the region’s shared vision for its future.

CMRPG

CMMPO

What will Mobility2040 accomplish?

CMRPG

CMMPO

National (MAP-21) and MassDOT Goals	Mobility2040 Goal (DRAFT)
Safety	Improve the Safety & Security of the Region.
Infrastructure Condition	Achieve State of Good Repair.
Economic Vitality/Freight Movement	Improve Economic Vitality & Freight Movement.
Congestion Reduction & System Reliability	Reduce Congestion & Improve Mobility for all modes.
GreenDOT/Mode Shift and Healthy Transportation	Increase Transportation Options & Promote Healthy Modes.
Environmental Sustainability	Reduce Greenhouse Gas & Promote Sustainable Practices.
Access to Essential Services	Equitable Transportation for all Populations.

Draft Goals for Mobility2040

Performance Measures are currently being developed for each of the goals shown here. Stakeholder feedback plays a key role in the creation of performance measures. The CMMPO is interested in hearing what you have to say regarding Mobility2040 Goals and Performance Measures.

Previous Long-Range Planning Accomplishments

What types of projects are included in a plan like Mobility2040?

Regional Transportation Funding

CMRPC

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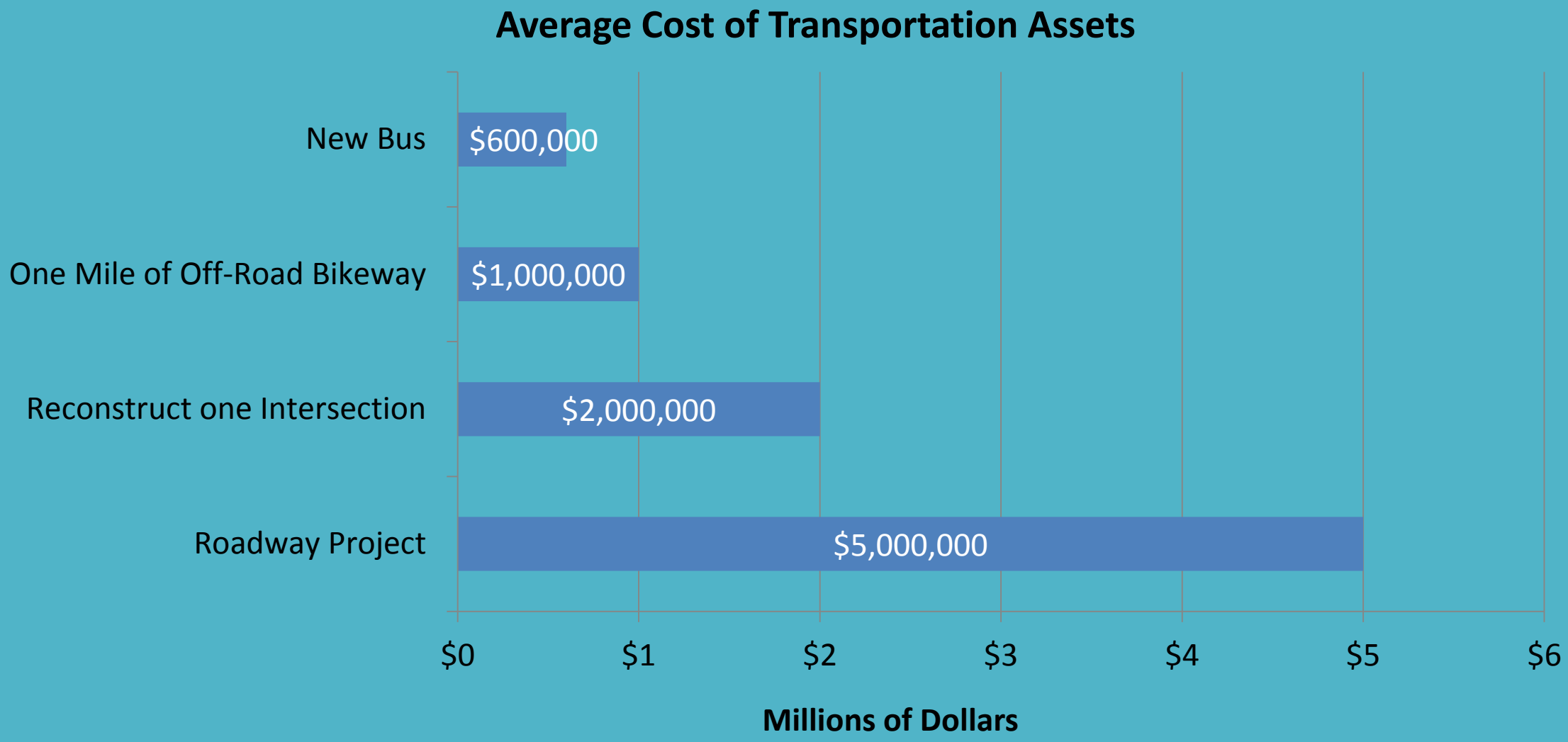
Your Plan – Your Needs

CMRPC

CMMPO



How much does a transportation project cost?

Mobility2040

Invest in Your Transportation Future

www.cmrpc.org/mobility2040 or @mobility2040

CMRPC

CMMPO

Stakeholder Feedback

What is important to you, to the region?

- Projects:
  - Improve Sidewalks and Increase the Number
  - Improve Safety of Rte 122 from Worcester to Camp St. Paxton

- Initiatives:
  - Reduce Congestion in Rural Towns
  - Eliminate Real Time Travel Message signs on Turnpike

- Policies:
  - Reduce signage along state roads
  - Reduce no. of traffic signals at intersections
  - Use Cement vs. asphalt and use granite curbing

Central Massachusetts Metropolitan Planning Organization
Long Range Transportation Plan

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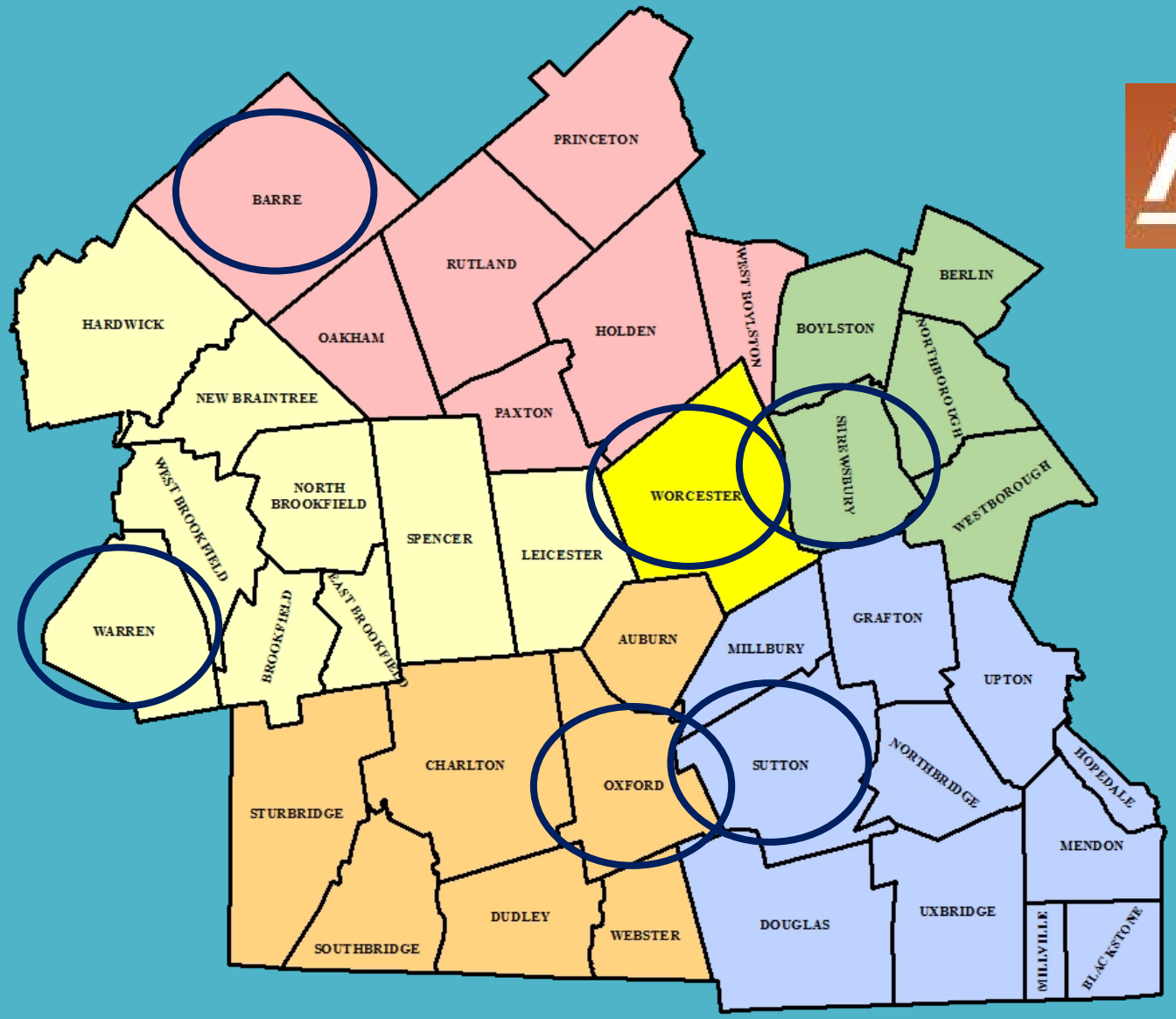

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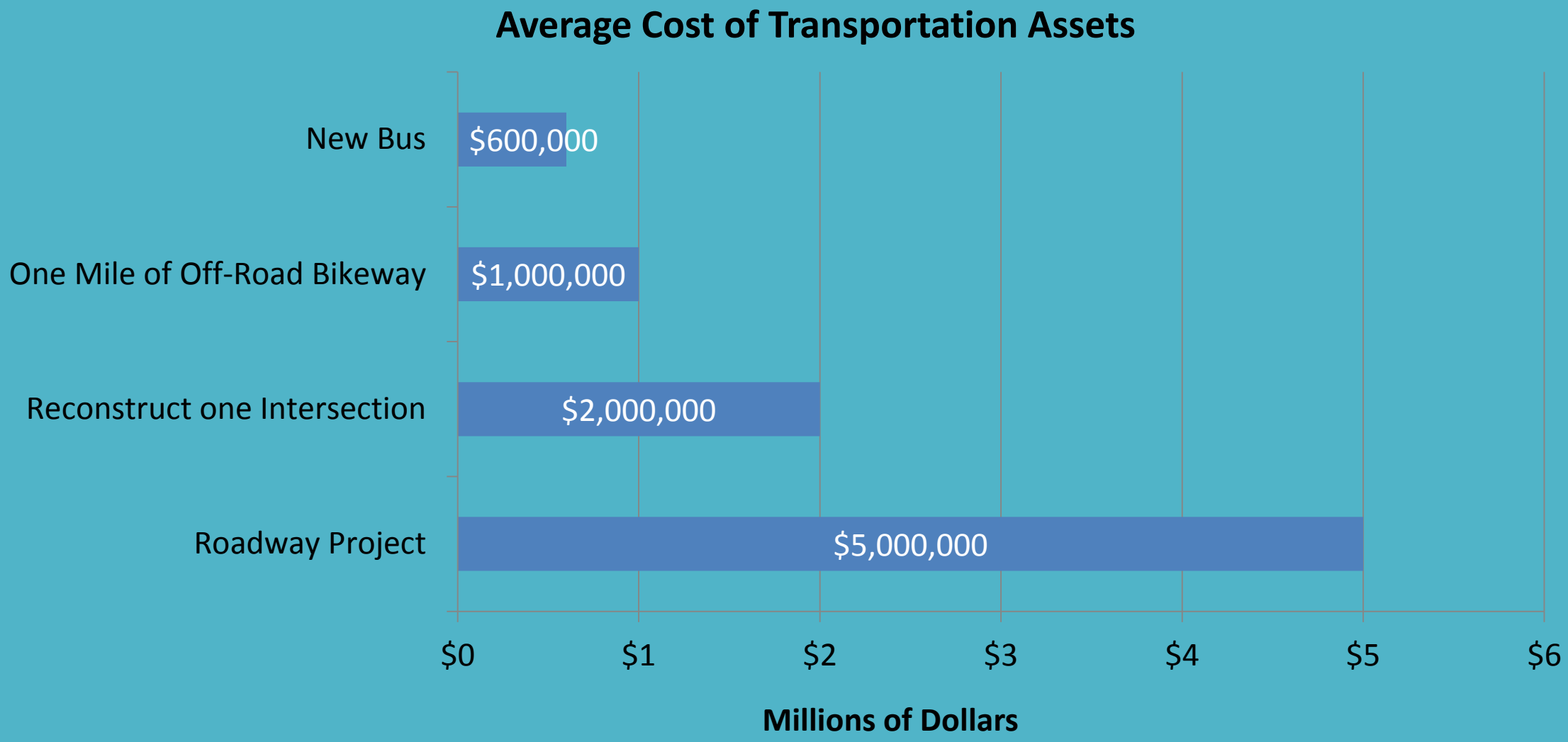

How much does a transportation project cost?

Mobility2040

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CMRPC

CMMPO

Stakeholder Feedback – WBW

What is important to you, to the region?

Projects

- Better train connection west to springfield
- Connection by rail to Providence (MBTA or Amtrak)
- Signal upgrades (tech)
- TSP for Transit
- Faster trains (Elect)
- Bike lanes, add protection where possible (West Boylston St, Chandler)

Policies

- More freq bus service in the City, esp around WSU
- WSU Parking issues, anti bike lane in the area (education?)
- Better alt mode planning in the region
- Pedestrians with sight issues, curbing, sidewalks, accessible crossings, technology, vision impaired apps,
- Trees/greenscapes/stormwater issues with streetscapes
- Movement to complete streets policy
- Closer alignment with land use and economic development
- Creating placees where people want to walk

Policies

- Legislation for cyclists and peds, vul users concept
- Idaho y law at stop signs

¿Cómo te gustaría invertir tu dinero en transportación?

Por favor, escoge tus 3 prioridades

En orden de importancia, escribe #1 al lado de tu primera prioridad, #2 para tu segunda prioridad y #3 para tu ú ltima prioridad.

MANTENIMIENTO VIAL

SEGURIDAD EN LA CARRETERA

CONGESTIÓN VEHICULAR

CARGA / ARRASTRE

TRANSPORTE COLECTIVO

BICICLETA

PEATONAL

TECNOLOGÍA

ACCESO AL AEREOPUERTO

MANEJO DE EMERGENCIAS

TREN DE PASAJEROS

OTRO:

_____

How would you like your transportation dollars spent?

Please choose your top 3 priorities

Write the #1 next to your top choice, #2 for your second choice, and #3 for your last choice

ROADWAY MAINTENANCE

SAFETY

CONGESTION

FREIGHT/TRUCKING

TRANSIT

BIKE

PEDESTRIAN

TECHNOLOGY

AIRPORT ACCESS ROADS

EMERGENCY MANAGEMENT

PASSENGER RAIL

OTHER:

_____

SURVEY RESULTS

CMRPC TRANSPORTATION STAFF
2016 LRTP PUBLIC OUTREACH

BACKGROUND INFORMATION

- **THREE FORMATS**
  - INTERACTIVE
  - PAPER
  - ONLINE

- **AVAILABLE AT STAKEHOLDER GROUP MEETINGS, PUBLIC INFORMATION TABLES, OTHER EVENTS**

- **TOTAL SURVEYS COMPLETED: 623**
  - INTERACTIVE: **61**
  - PAPER: **229**
  - ONLINE: **333**

1. WHAT TOWN/CITY DO YOU LIVE IN?

(ONLINE, PAPER, INTERACTIVE)

TOWN	SURVEY RESPONSES
WORCESTER	154
AUBURN	38
WEST BOYLSTON	32
HARDWICK	30
NORTHBRIDGE	30
BERLIN	24
SHREWSBURY	24
OUTSIDE OF REGION	21
MILLBURY	16
STURBRIDGE	16
OXFORD	14
BOYLSTON	12
HOLDEN	12
RUTLAND	12
LEICESTER	10
SOUTHBRIDGE	10
NORTHBOROUGH	9
CHARLTON	8
GRAFTON	8
MILLVILLE	8
UXBRIDGE	8

TOWN	SURVEY RESPONSES
BARRE	6
WESTBOROUGH	6
DUDLEY	5
PRINCETON	5
SPENCER	5
SUTTON	5
WEST BROOKFIELD	5
BROOKFIELD	4
WEBSTER	4
BLACKSTONE	3
HOPEDALE	3
NORTH BROOKFIELD	3
PAXTON	3
UPTON	3
NEW BRAINTREE	2
DOUGLAS	1
EAST BROOKFIELD	1
MENDON	1
OAKHAM	1
WARREN	1
TOTAL	**563**

1. WHAT TOWN/CITY DO YOU LIVE IN? (BY SUBREGION)

CENTRAL SUBREGION	SURVEY RESPONSES
WORCESTER	154

NON CMMPO REGION	SURVEY RESPONSES
OUTSIDE OF REGION	21

NORTH SUBREGION	SURVEY RESPONSES
BARRE	6
HOLDEN	12
OAKHAM	1
PAXTON	3
PRINCETON	5
RUTLAND	12
WEST BOYLSTON	32
TOTAL	71

NORTHEAST SUBREGION	SURVEY RESPONSES
BERLIN	24
BOYLSTON	12
NORTHBOROUGH	9
SHREWSBURY	24
WESTBOROUGH	6
TOTAL	75

SOUTHEAST SUBREGION	SURVEY RESPONSES
BLACKSTONE	3
DOUGLAS	1
GRAFTON	8
HOPEDALE	3
MENDON	1
MILLBURY	16
MILLVILLE	8
NORTHBRIDGE	30
SUTTON	5
UPTON	3
UXBRIDGE	8
TOTAL	86

SOUTHWEST SUBREGION	SURVEY RESPONSES
AUBURN	38
CHARLTON	8
DUDLEY	5
OXFORD	14
SOUTHBRIDGE	10
STURBRIDGE	16
WEBSTER	4
TOTAL	95

WEST SUBREGION	SURVEY RESPONSES
BROOKFIELD	4
EAST BROOKFIELD	1
HARDWICK	30
LEICESTER	10
NEW BRAINTREE	2
NORTH BROOKFIELD	3
SPENCER	5
WARREN	1
WEST BROOKFIELD	5
TOTAL	61

2. WHAT TOWN/CITY DO YOU WORK IN? (ONLINE)

TOWN	SURVEY RESPONSES
WORCESTER	122
OUTSIDE OF REGION	80
SHREWSBURY	17
LEICESTER	15
AUBURN	9
WEST BOYLSTON	9
WESTBOROUGH	7
BERLIN	5
STURBRIDGE	5
CHARLTON	4
MENDON	4
MILLBURY	4
OXFORD	4
HARDWICK	3
NORTHBRIDGE	3
SPENCER	3
BARRE	2
BROOKFIELD	2
DUDLEY	2
GRAFTON	2
NORTHBOROUGH	2

TOWN	SURVEY RESPONSES
PAXTON	2
SOUTHBRIDGE	2
WARREN	2
BOYLSTON	1
HOLDEN	1
HOPEDALE	1
MILLVILLE	1
NEW BRAINTREE	1
PRINCETON	1
RUTLAND	1
UPTON	1
UXBRIDGE	1
WEBSTER	1
WEST BROOKFIELD	1
BLACKSTONE	0
DOUGLAS	0
EAST BROOKFIELD	0
NORTH BROOKFIELD	0
OAKHAM	0
SUTTON	0
TOTAL	**321**

2. WHAT TOWN/CITY DO YOU WORK IN? (BY SUBREGION)

CENTRAL SUBREGION	SURVEY RESPONSES
WORCESTER	122

NON CMMPO REGION	SURVEY RESPONSES
OUTSIDE OF REGION	80

NORTH SUBREGION	SURVEY RESPONSES
BARRE	2
HOLDEN	1
OAKHAM	0
PAXTON	2
PRINCETON	1
RUTLAND	1
WEST BOYLSTON	9
TOTAL	16

NORTHEAST SUBREGION	SURVEY RESPONSES
BERLIN	5
BOYLSTON	1
NORTHBOROUGH	2
SHREWSBURY	17
WESTBOROUGH	7
TOTAL	32

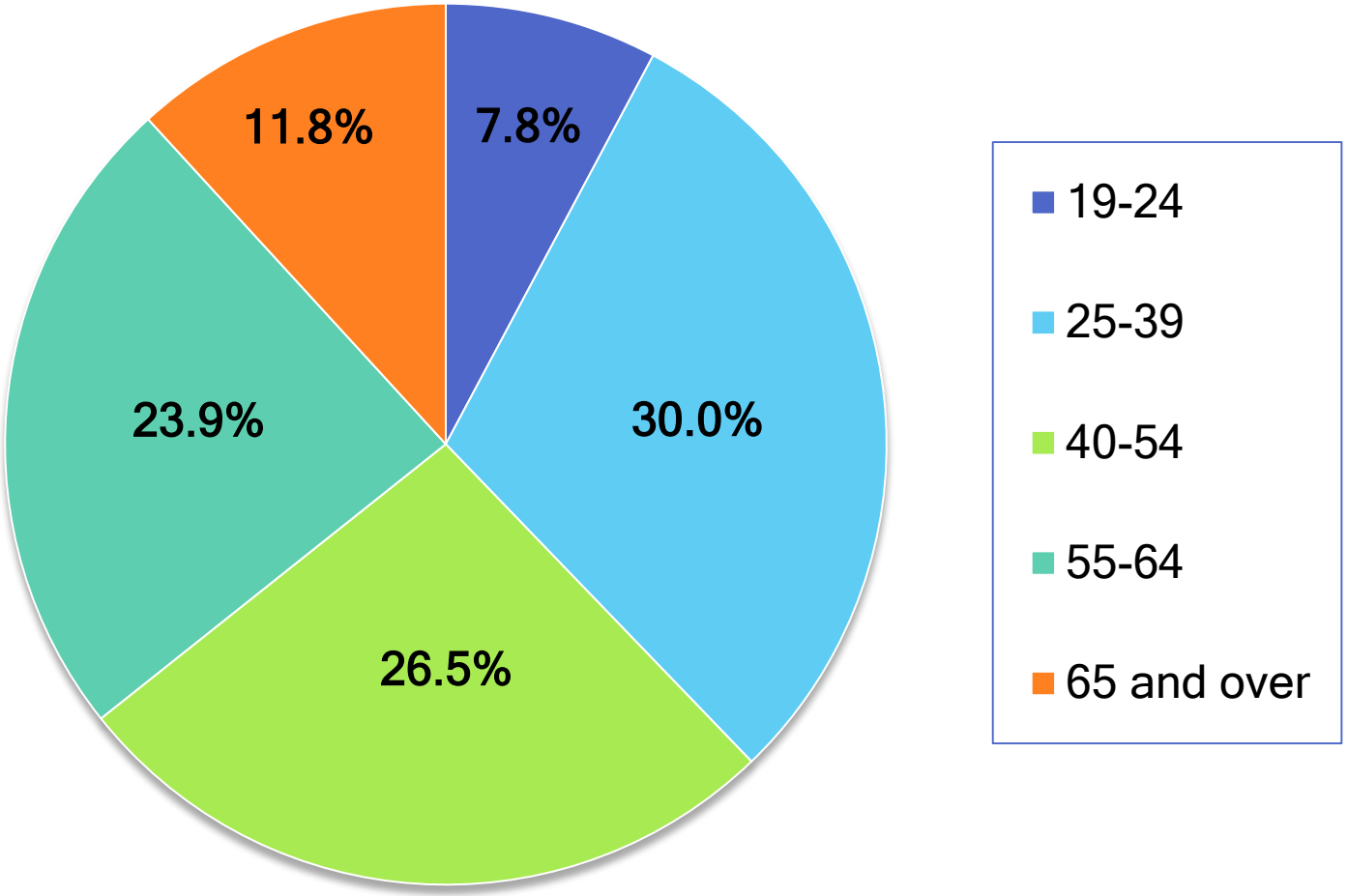
SOUTHEAST SUBREGION	SURVEY RESPONSES
BLACKSTONE	0
DOUGLAS	0
GRAFTON	2
HOPEDALE	1
MENDON	4
MILLBURY	4
MILLVILLE	1
NORTHBRIDGE	3
SUTTON	0
UPTON	1
UXBRIDGE	1
TOTAL	17

SOUTHWEST SUBREGION	SURVEY RESPONSES
AUBURN	9
CHARLTON	4
DUDLEY	2
OXFORD	4
SOUTHBRIDGE	2
STURBRIDGE	5
WEBSTER	1
TOTAL	27

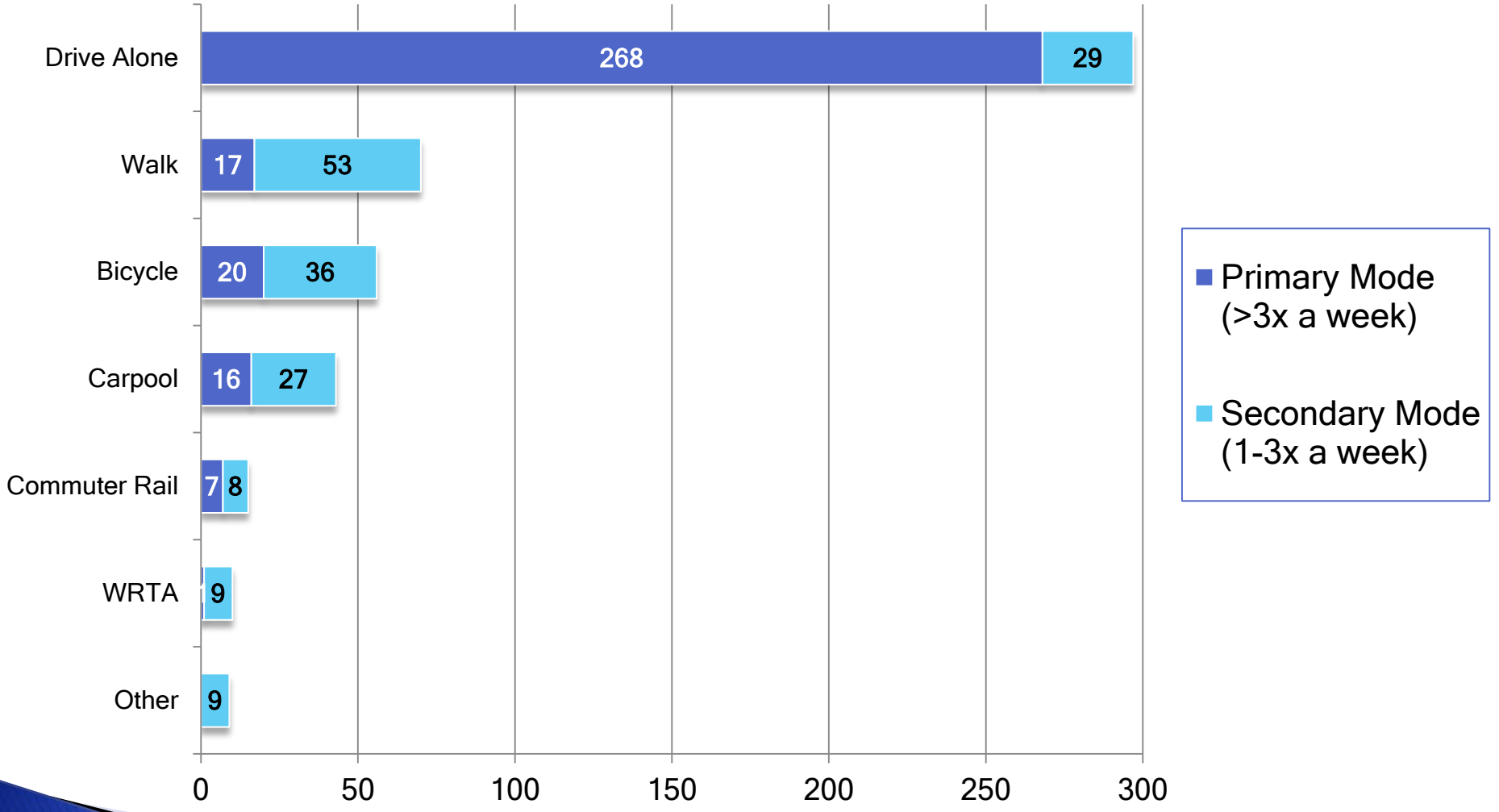
WEST SUBREGION	SURVEY RESPONSES
BROOKFIELD	2
EAST BROOKFIELD	0
HARDWICK	3
LEICESTER	15
NEW BRAINTREE	1
NORTH BROOKFIELD	0
SPENCER	3
WARREN	2
WEST BROOKFIELD	1
TOTAL	27

3. WHAT IS YOUR AGE GROUP?

(ONLINE, INTERACTIVE)

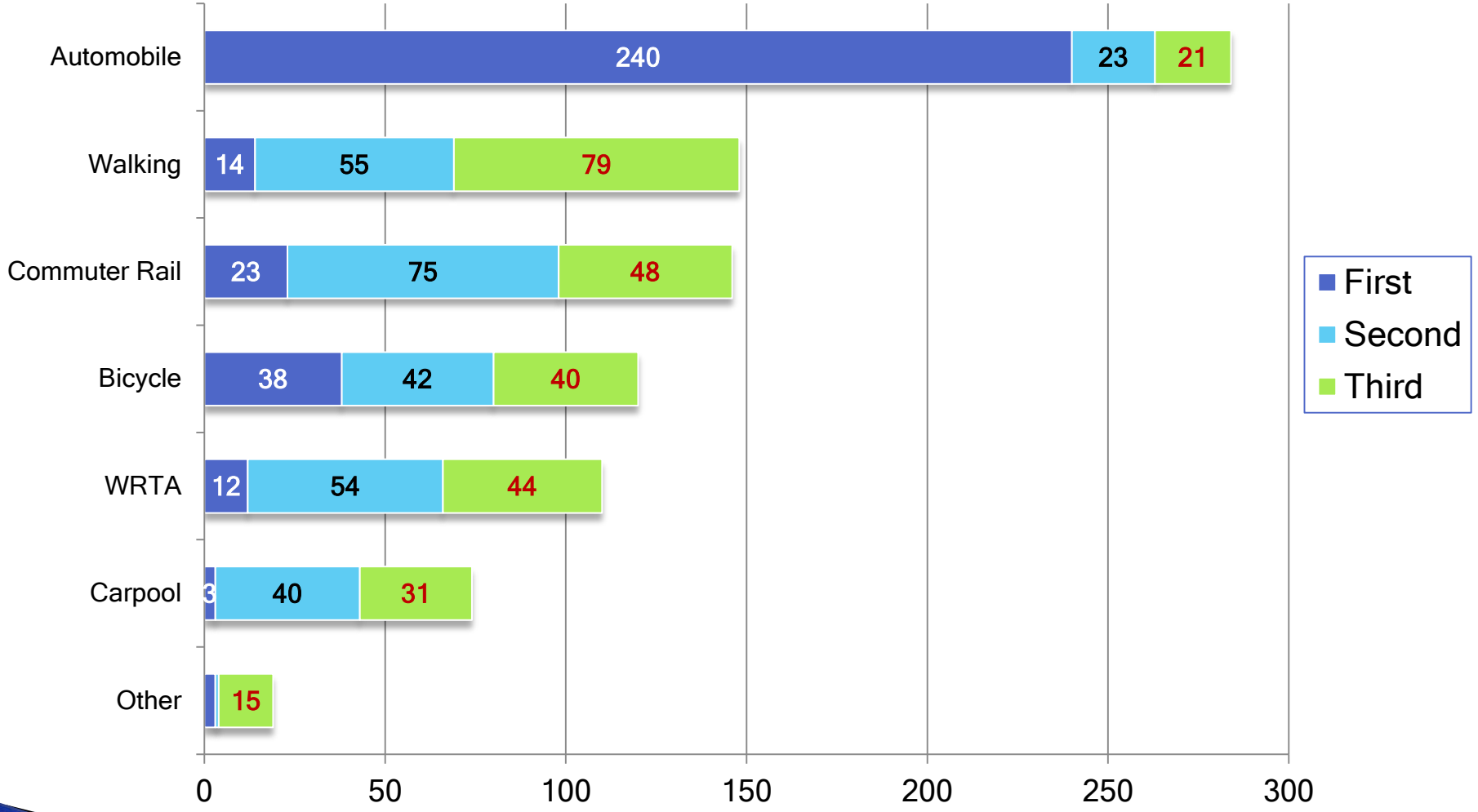


4. WHAT MODES OF TRAVEL DO YOU USE AND HOW OFTEN DO YOU UTILIZE EACH MODE? (ONLINE)



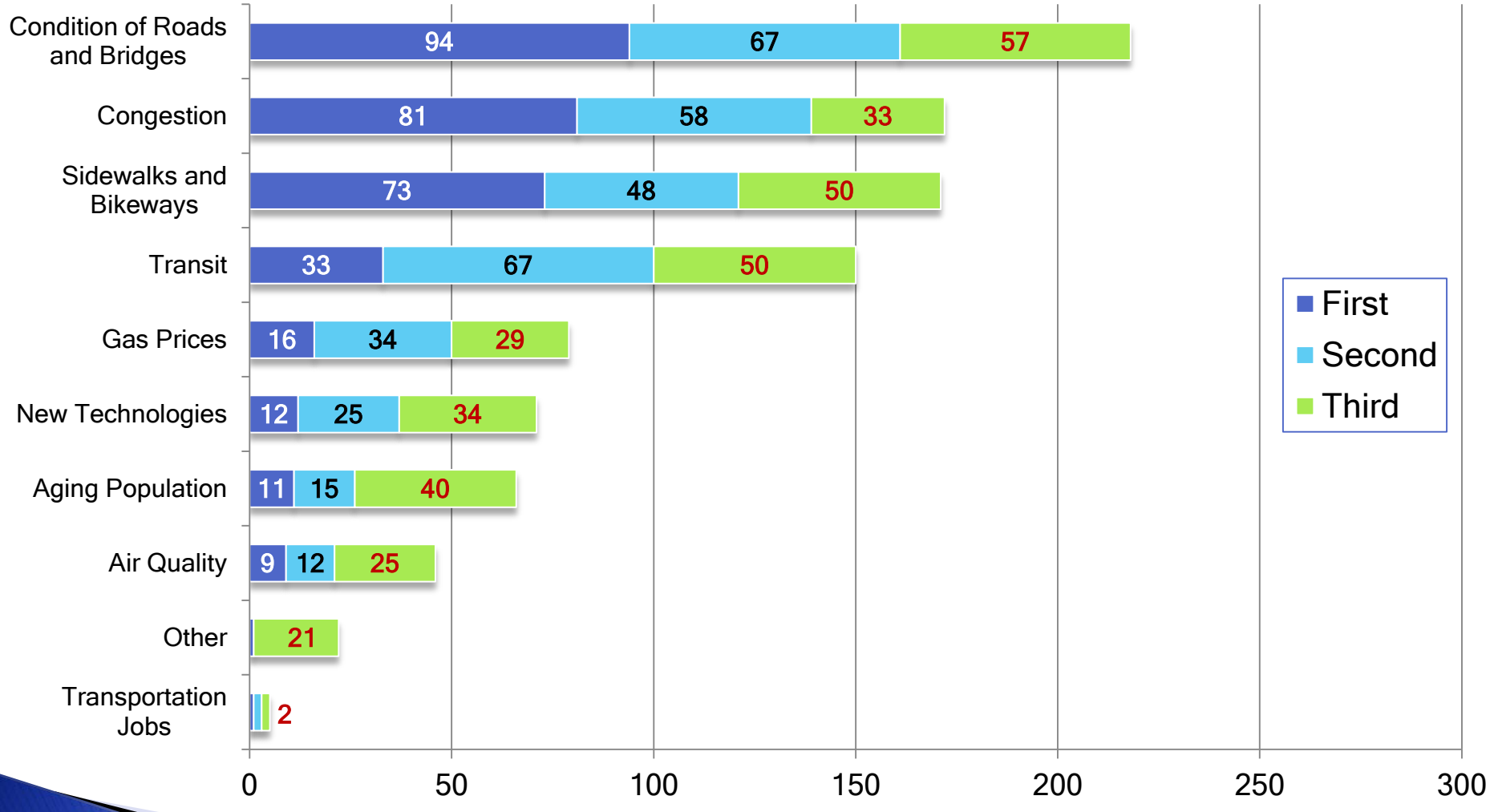
Other Responses Include: Combination of options listed above.

5. WHAT THREE METHODS OF TRANSPORTATION DO YOU BELIEVE WILL BE MOST IMPORTANT TO YOU IN THE FUTURE? (ONLINE)



Other Responses Include: Gondolas, Subway system, Scooter, Horse, Motorcycle, Cab, Skateboard, Moped, Shared Ride/Uber, Car Sharing via Autonomous Vehicles

6. WHAT ARE THE TOP THREE ISSUES TO CONSIDER IN THE MOBILITY 2040 PLAN? (ONLINE)



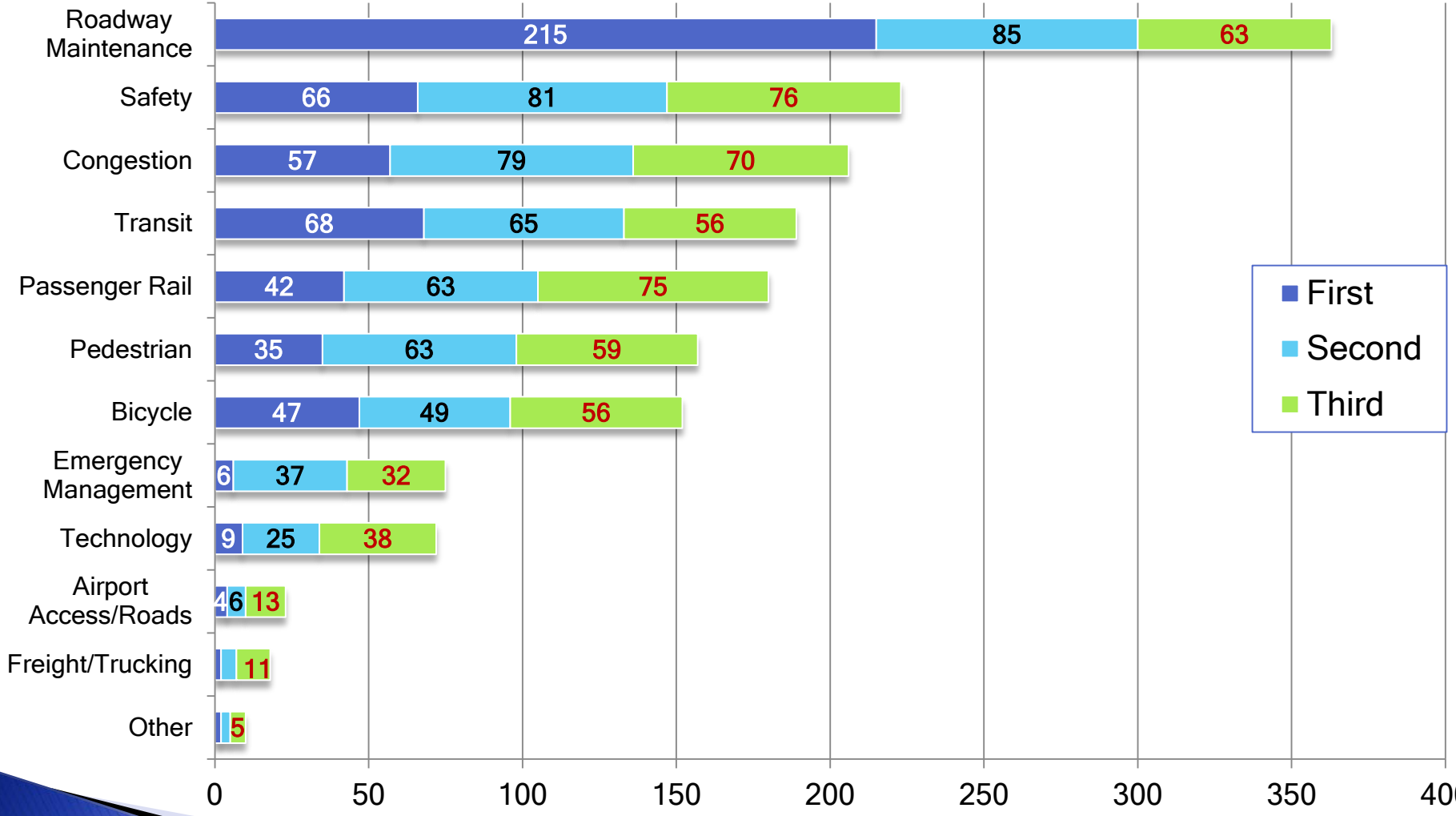
OTHER ISSUES TO CONSIDER IN MOBILITY 2040

- Mass Pike Interchange in Warren
- Environmental concerns/carbon footprint
- Not enough public transportation
- Transit: quality, accessibility, affordability
- Safety
- Trails
- Greenery along sidewalks/roadways
- Higher speed commuter rail
- Bike paths separate from roads/bike lanes
- Expanding residential presence in Downtown

7. WHAT ARE THE TOP THREE MOST DIFFICULT AREAS OR INTERSECTIONS YOU ENCOUNTER ON A REGULAR BASIS? (ONLINE)

SEE MAPS

8. HOW WOULD YOU LIKE YOUR TRANSPORTATION DOLLARS SPENT? CHOOSE TOP THREE PRIORITIES (ONLINE AND PAPER)



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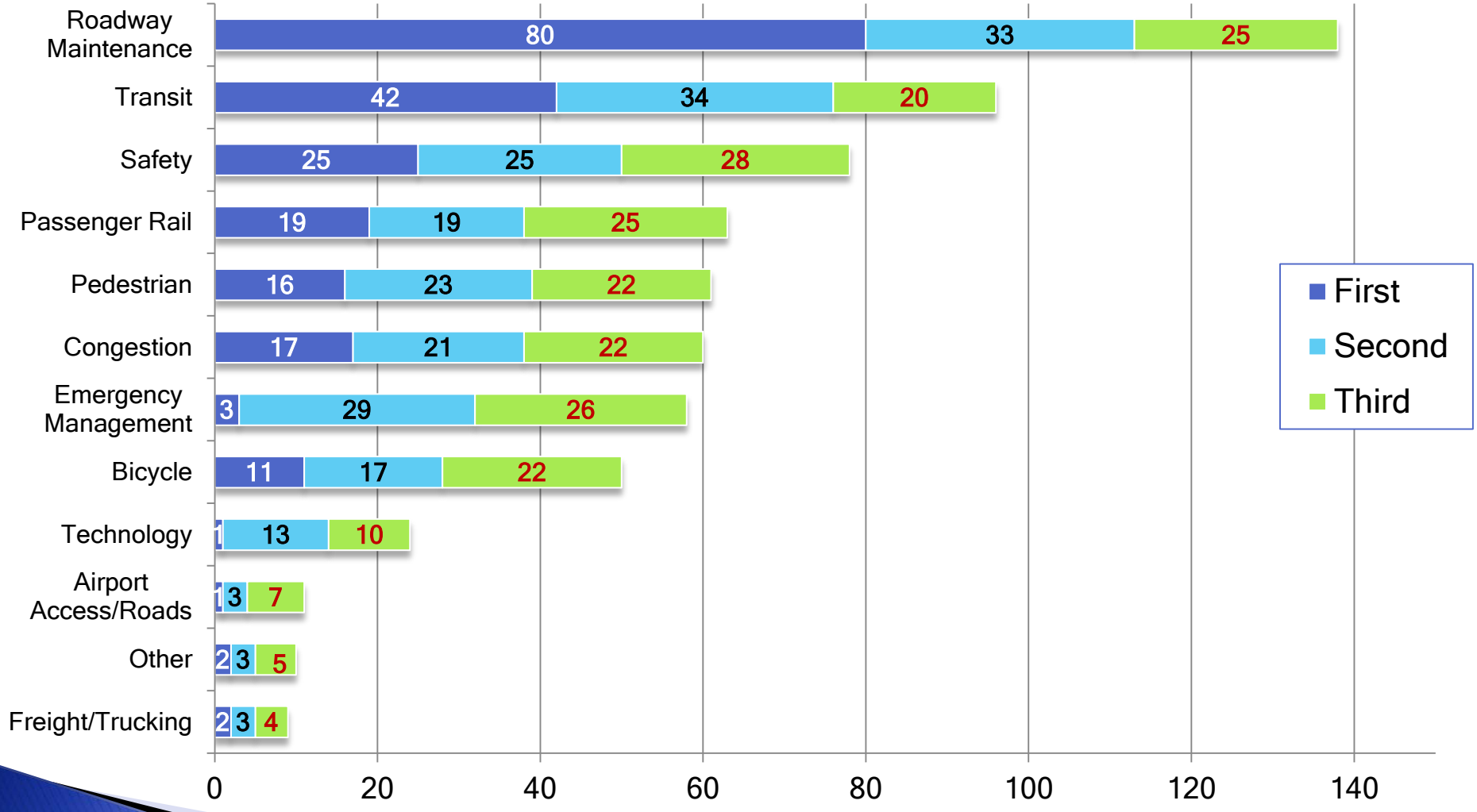


8. HOW WOULD YOU LIKE YOUR TRANSPORTATION DOLLARS SPENT? CHOOSE TOP THREE PRIORITIES (INTERACTIVE)

USING THE FOLLOWING PRICE SCALE, RESPONDENTS WERE ASKED TO INVEST $100 BASED ON PERSONAL PREFERENCE

Price Scale	Congestion	Safety	Maintenance	Technology	Transit	BikePed	Freight
No Level	$ ---	$ ---	$ ---	$ ---	$ ---	$ ---	$ ---
Low Level	$ 15.00	$ 15.00	$ 15.00	$ 5.00	$ 10.00	$ 5.00	$ 10.00
Mid Level	$ 20.00	$ 20.00	$ 35.00	$ 10.00	$ 20.00	$ 10.00	$ 20.00
High Level	$ 40.00	$ 30.00	$ 60.00	$ 15.00	$ 30.00	$ 15.00	$ 40.00

Total	Congestion	Safety	Maintenance	Technology	Transit	BikePed	Freight
No Level	*15*	*18*	*13*	*14*	*20*	*16*	*29*
Low Level	*13*	*16*	*12*	*10*	*17*	*11*	*13*
Mid Level	*23*	*15*	*26*	*19*	*10*	*12*	*12*
High Level	*10*	*12*	*10*	*18*	*14*	*22*	*7*
Total Selections	**46**	**43**	**48**	**47**	**41**	**45**	**32**
Average Investment	**$16**	**$14**	**$31**	**$7**	**$11**	**$8**	**$11**

INDICATES PREFERENCES FOR BALANCED INVESTMENT PLAN

AGE GROUP INFORMATION

- 19-24:
  - Primarily drive alone, but show alternative modes as secondary modes.
  - Primarily believe autos are most important in the future, but leaning towards commuter rail/bicycle as secondary options
  - Top issues to consider in plan: sidewalks/bikeways, condition of roads/bridges
    - Secondary issues: transit, new technologies
  - Priorities for funding spent: roadway maintenance, bicycle, congestion, technology

- 25-39
  - Similar characteristics with primary focus on autos, and commuter rail/bicycle as secondary options
  - Consider top issues to be equally split amongst condition of roads and congestion
  - Same priorities for funding distribution

AGE GROUP INFORMATION

- 40-54:
  - More emphasis on walking, as a secondary mode and as a focus point for future planning
  - Similar issues to consider in plan, but with more emphasis on commuter rail and transit
  - Same priorities for funding distribution

- 55-64:
  - More emphasis on walking, as a secondary mode and as a focus point for future planning
  - Secondary issues entail transit, commuter rail, aging population
  - Similar priorities for funding distribution, but more investment needed in transit and safety

- 65 and over:
  - Similar modes of transportation and focus points for future planning as 55-64 age category
  - Secondary issues: transit, aging population, sidewalks/bikeways
  - Priorities for funding spent: roadway maintenance, commuter rail, safety, transit

SUBREGION INFORMATION

- North:
  - Primarily drive alone, secondary mode walk
  - Primarily believe autos are most important in the future, secondary commuter rail
  - Top issues to consider in plan: condition of roads/bridges, congestion, transit
    - Secondary issues: sidewalks/bikeways
  - Priorities for funding spent: roadway maintenance, congestion, safety, passenger rail

- Northeast:
  - Primarily drive alone, secondary mode carpool
  - Primarily believe autos are most important in the future, commuter rail and pedestrian as secondary options
  - Top issues to consider in plan: equally split amongst condition of roads, congestion
    - Secondary issues: sidewalks/bikeways, transit
  - Priorities for funding spent: roadway maintenance, commuter rail, congestion, safety

SUBREGION INFORMATION

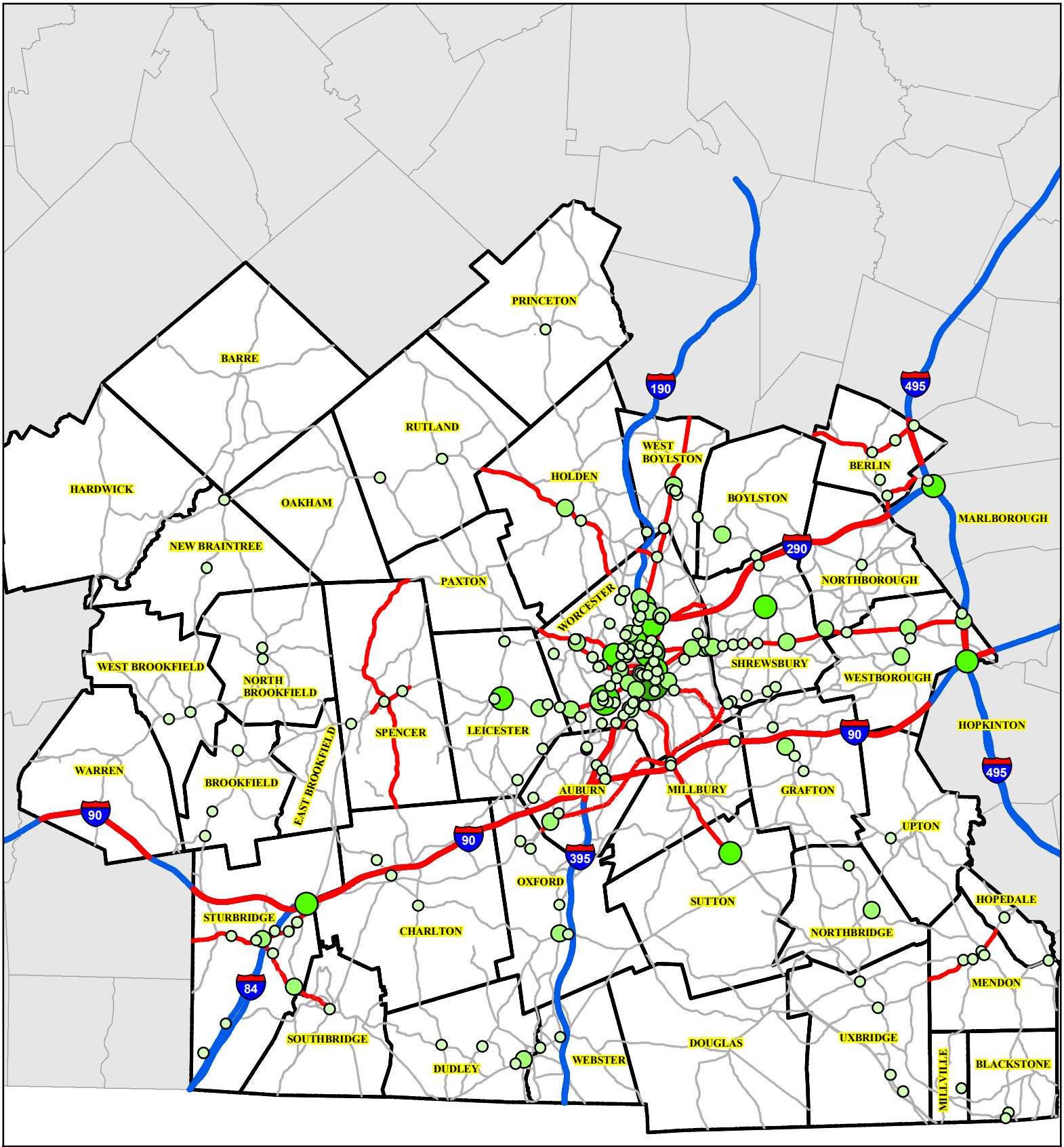
- Southeast:
  - Primarily drive alone, secondary mode carpool
  - Primarily believe autos are most important in the future, secondary carpool and walking
  - Top issues to consider in plan: condition of roads/bridges, congestion
    - Secondary issues: transit, sidewalks/bikeways
  - Priorities for funding spent: roadway maintenance, congestion, safety

- Southwest:
  - Primarily drive alone, secondary mode carpool/walk
  - Primarily believe autos are most important in the future, WRTA buses and commuter rail as secondary options
  - Top issues to consider in plan: congestion, condition of roads/bridges
    - Secondary issues: transit, sidewalks/bikeways, gas prices
  - Priorities for funding spent: roadway maintenance, safety, congestion, transit

SUBREGION INFORMATION

- West:
  - Primarily drive alone, secondary mode walk
  - Primarily believe autos are most important in the future, secondary WRTA bus
  - Top issues to consider in plan: condition of roads/bridges, gas prices
    - Secondary issues: sidewalks/bikeways, transit
  - Priorities for funding spent: roadway maintenance, safety, commuter rail, congestion

- Central:
  - Primarily drive alone, secondary mode bicycle/walk
  - Primarily believe autos/bicycles are most important in the future, walking and WRTA buses and as secondary options
  - Top issues to consider in plan: sidewalks/bikeways, transit
    - Secondary issues: condition of roads/bridges, congestion, new technologies
  - Priorities for funding spent: bicycle, pedestrian, commuter rail, transit



N

0 1.25 2.5 5 Miles

Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT/Office Of Transportation Planning Geospatial Resources Section and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division.

Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution intrepreting positional accuracy.

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2 Washington Square, Union Station
Worcester, MA 01604

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Intersection Responses

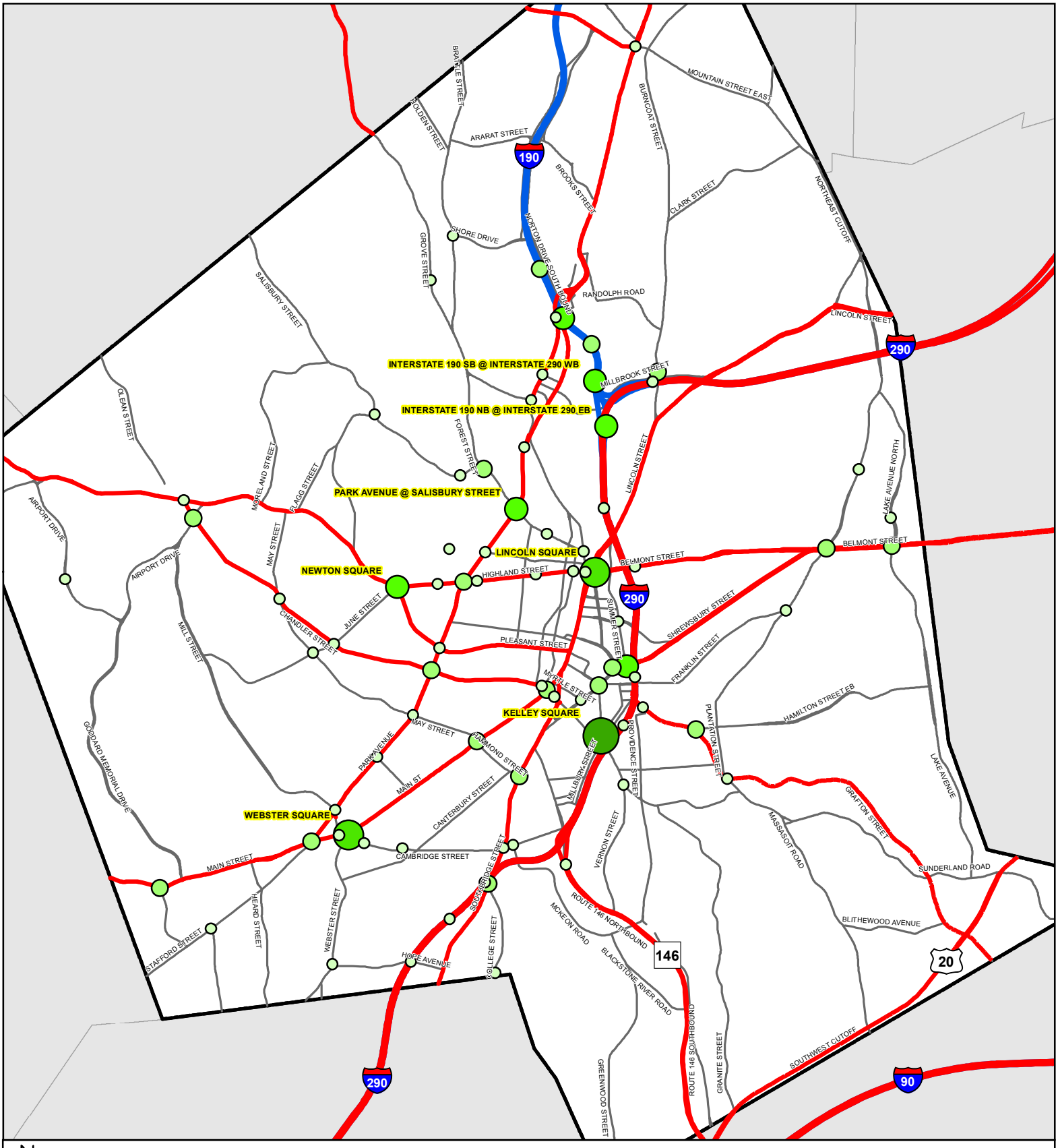
- 1 - 2
- 3 - 6
- 7 - 12
- 13 - 19
- 20 - 80

- Area Responses
- Interstates
- FedAid Eligible Roads
- CMRPC Region
- Outside of Region

Mobility2040 Invest in Your Transportation Future

Mobility2040 Survey Responses

Most Difficult Areas and Intersections Encountered on a Regular Basis



N

0 0.225 0.45 0.9 Miles

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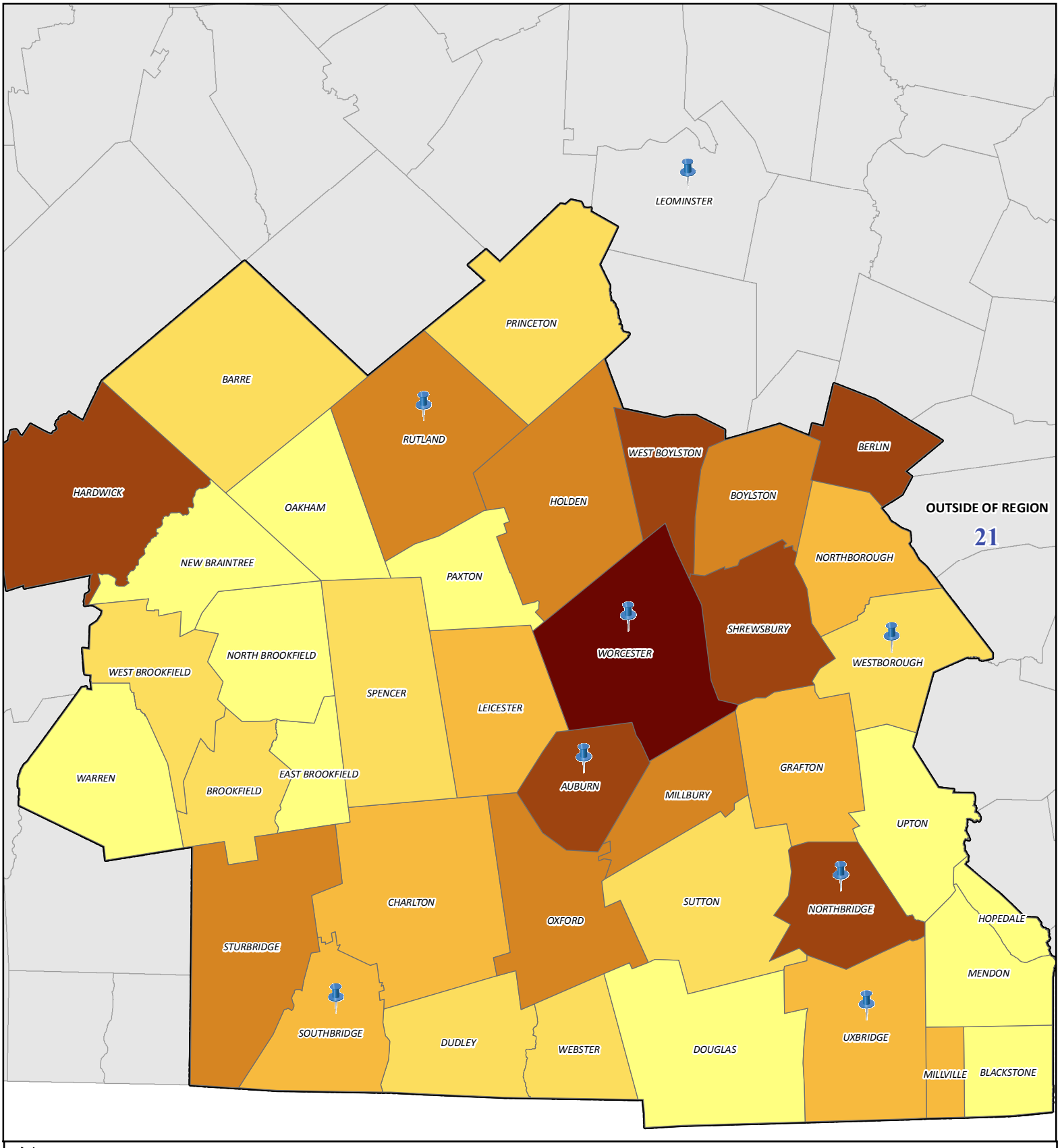
Mobility2040 Survey Responses

Most Difficult Areas and Intersections Encountered on a Regular Basis



N

0 1.25 2.5 5 Miles

Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT/Office Of Transportation Planning Geospatial Resources Section and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division.

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Produced by the Central Massachusetts Regional Planning Commission (CMRPC)
2 Washington Square, Union Station
Worcester, MA 01604

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Mobility2040 Invest in Your Transportation Future

Mobility2040 Survey Responses

\# = Additional Surveys Solicited

= Public and Stakeholder Outreach

CMRPC Towns

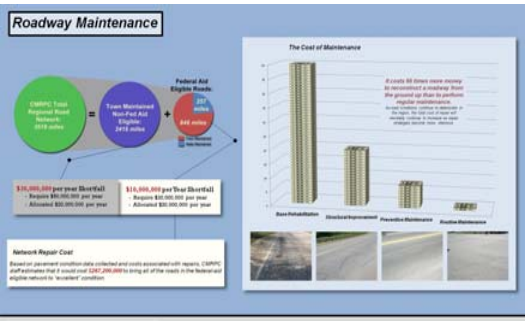
All Survey Responses

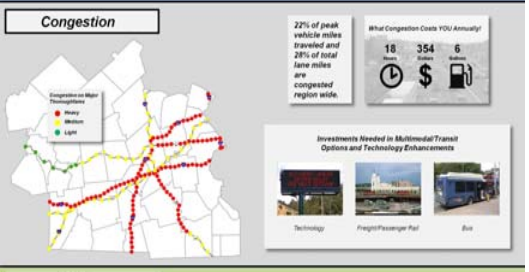
- 1 - 3
- 4 - 6
- 7 - 10
- 11 - 16
- 17 - 38
- 39 - 154

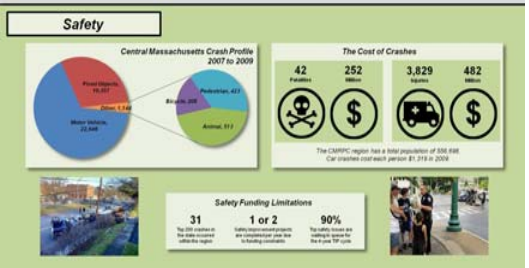
Mobility 2040

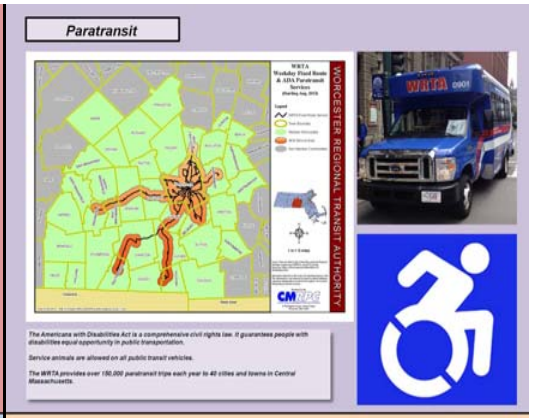
Invest in Your Transportation Future

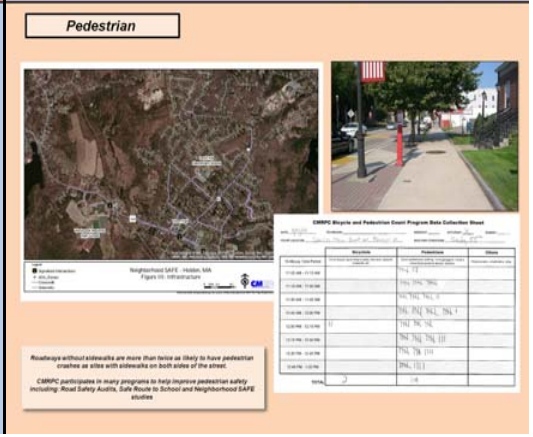
Central Massachusetts Metropolitan Planning Organization
Long Range Transportation Plan




Congestion
22% of peak vehicle miles traveled and 28% of total lane miles are congested region wide.
What Congestion Costs YOU Annually!
18
354
6
Investments Needed in Multimodal Transit Options and Technology Enhancements







CMMPO
Central Massachusetts Metropolitan Planning Organization

Visit Our Website
www.cmrpc.org/mobility2040
Submit Comments: **trans@cmrpc.org**
Follow Us On Twitter **@mobility2040**

CMRPC
Central Massachusetts Regional Planning Commission

Meeting Name	Staff Attended	Date	Time
Worcester Business Expo	RAR, KK, SJ, DD	9/8/2014	9AM - 4PM
CMRPC Quarterly Meeting	MEB, RR	9/11/2014	6:30 - 7PM
Big Bunny	DD, ED	9/18/2014	2PM - 4PM
Worcester County Selectmens Association	RR	9/18/2014	6:00 - 6:45 PM
Shaws	NB, MEB	9/23/2014	4:00 - 6:00 PM
Freight Roundtable	RAR	9/24/2014	
CMMPO SE Subregion Selection Meeting	NB	9/24/2014	5:30 - 7:00 PM
CMMPO SW Subregion Selection Meeting	NB	9/25/2014	6:30 - 8:00 PM
Auburn Mall	SM, RR	9/27/2014	12:00 - 2:00PM
WPI Green Auto Fair	RR, JO	10/2/2014	10:00 - 11:30AM
Mobile Farmers Market @ WRTA Hub	RAR, DD	10/2/2014	12:30 - 2:00PM
Union Station - Commuter Rail	RR	10/9/2014	6:00 - 8:00AM
Worcester County Highway Association	SM	10/14/2014	
Walk Bike Worcester	DD	10/15/2014	6:30 - 8:30 PM
495/MetroWest Partnership	RAR, SM	10/23/2014	8:30AM
Worcester County Agricultural Commission Meeting	NB	10/23/2014	6:15 - 7:00 PM
Quinsigamond Community College	NB, ED	10/27/2014	12:00 - 2:00 PM

Location	PC Surveys	Paper Surveys
DCU Center	11	0
CMRPC Union Hall	14	2
Southbridge	4	3
CMRPC Union Hall	4	2
Northbridge	5	2
CMRPC Union Hall		1
Uxbridge Town Hall	n/a	0
JEL, Southbridge	n/a	4
Auburn	0	11
WPI	5	34
WRTA Hub	1	27
Worcester	n/a	14
Leominster	n/a	6
CMRPC Conference	N/A	0
Westborough		
CMRPC Union Hall	3	0
Worcester	6	0

Comments

Person would like to see later PM service on WRTA Route A coming back from the Shoppes.
Stakeholder Meeting
Need considerations of commuter rail.
Need considerations of commuter rail and include a focus on electric vehicles under alternate mode and technology.

Link to Mobility 2040 SurveyMonkey sent to:

CMMPO
CMMPO Interested Parties
T-Committee
CMMPO Advisory Committee
TPAG
Bike/Ped Task Force
WalkBike Worcester
Regional DPW/Highway Supers/Town Engineers list
Town Managers/Administrators
Town Clerks
Board of Selectmen/City and Town Councils
Town/City Planners
Town/City Planning Boards
WRTA Staff

Central Massachusetts Metropolitan Planning Organization
Long Range Transportation Plan

CMRPC

CMMPO

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- Provide a brief overview of the Central Massachusetts Metropolitan Planning Organization (CMMPO) and the role that Central Massachusetts Regional Planning Commission Transportation Staff plays in regard to the MPO.
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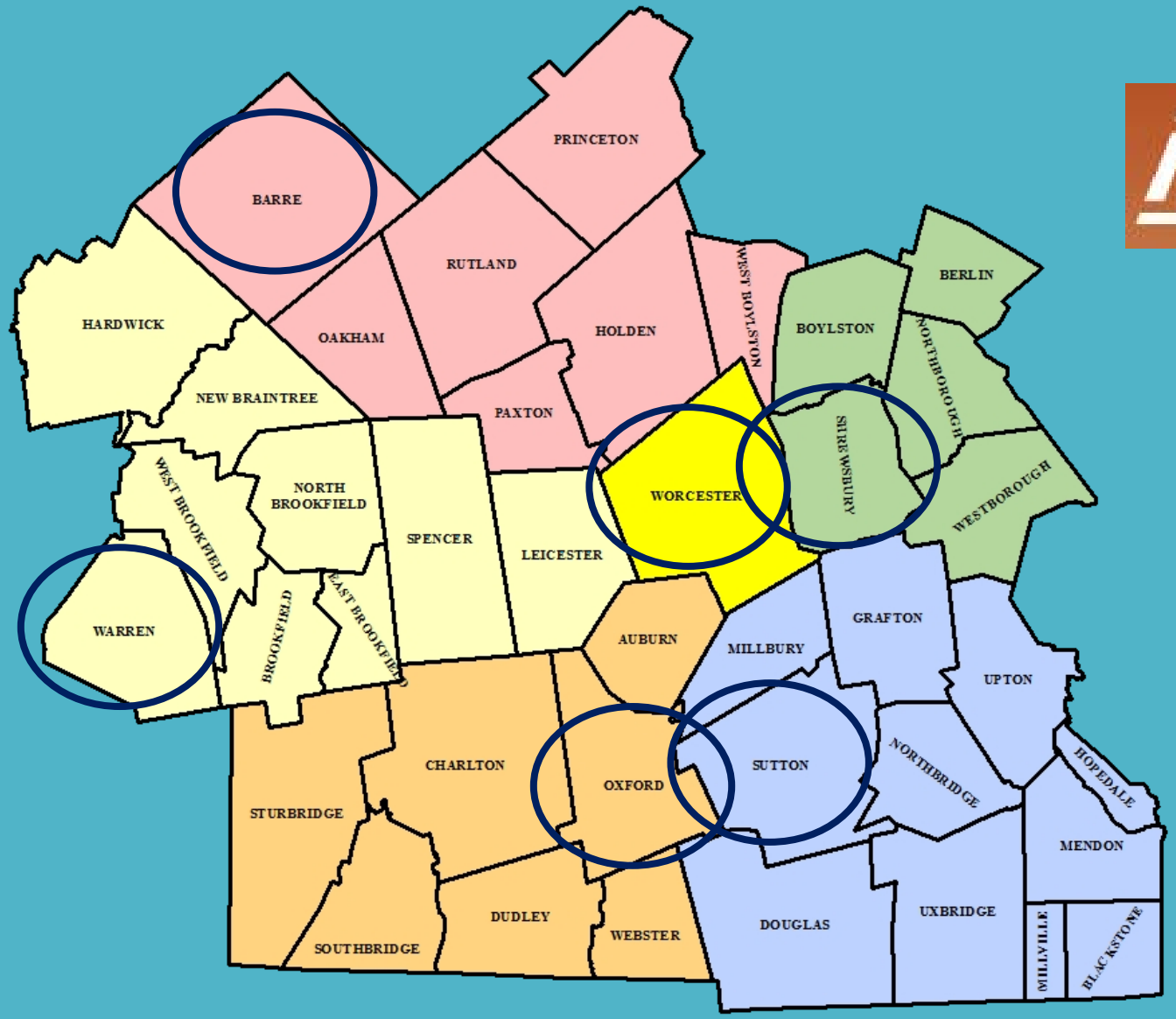
- Discuss next steps.



Moving Massachusetts Forward
massDOT

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CMRPC

CMMPO

Planning vs. Implementation

Planning

CMMPO & Staff

- Long Range Planning
- Regional Outlook
- Allocation of federal funding that can be used for implementation

Implementation

Local Municipalities

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- Bike lanes
- Traffic signals
- Sidewalks

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- Interstate System
- State Highways
- Bridges
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- ITS

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CMRPG

CMMPO

What will Mobility2040 accomplish?

CMRPG

CMMPO

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Previous Long-Range Planning Accomplishments

What types of projects are included in a plan like Mobility2040?

Regional Transportation Funding

CMRPC

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Your Plan – Your Needs

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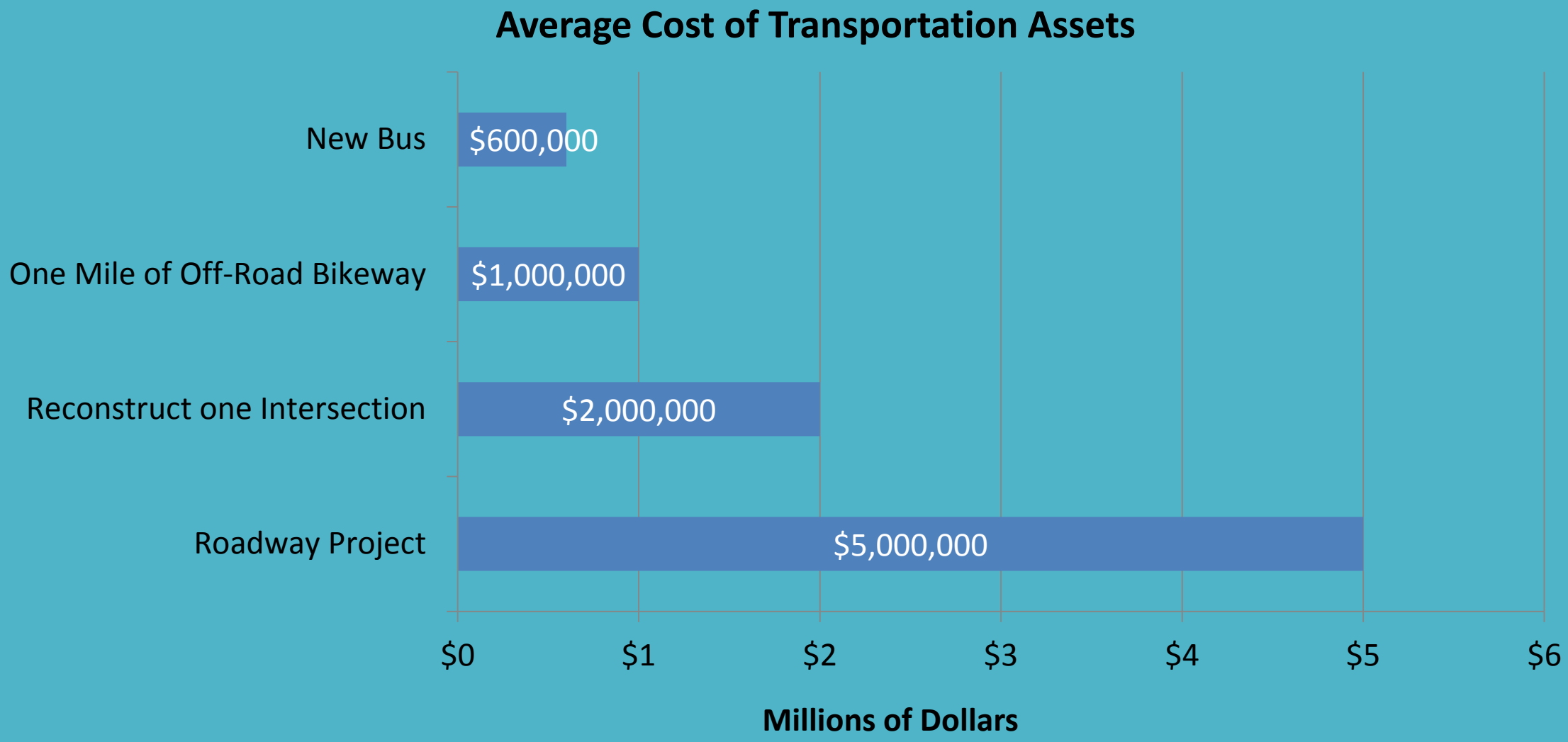

How much does a transportation project cost?

Mobility2040

Invest in Your Transportation Future

www.cmrpc.org/mobility2040 or @mobility2040

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Projects of Significance to this Area

- I-495/Route 9 interchange improvements, Westborough
- Route 9 improvements, Westborough (& Southborough)
- Route 9/Lyman Street improvements programmed on TIP, Westborough
- I-495/MassPike (I-90) interchange removal of tolls, channelization of flows, Westborough (& Hopkinton)
- 495 Partnership's "2014 Top Ten Transportation Nightmares" (in the CMRPC region)
- Rethinking the existing rotary in Westborough town center
- MBTA Commuter Rail & associated transit services, WRTA (& MWRTA)
- "Boston Worcester Air Line Trail" an 18.4 mile multi-use trail proposal along a former trolley line r-o-w, Shrewsbury-Westborough (Southborough-Framingham)
- On the fringe: I-290/I-495 interchange, Marlborough

Stakeholder Feedback – 495 Partnership

What is important to you, to the region?

- Projects:
  - Westborough Rotary
  - Rte 9/Lyman St Intersection
  - Rte 16 Blackstone Valley (to alleviate traffic congestion) (#9)
  - I-495 and Rte 9 in Westborough (#7)
  - I-495/Turnpike (#6)
  - Commuter Rail (#4)
  - The Turnpike (#2)
  - Rte 9 Corridor (#1)

- Initiatives:
  - Need to connect RTAs (Suburban mobility challenges (#3))
  - Park and Ride lots

Initiatives

Policies

495/MetroWest Partnership Transportation Committee Meeting

CMMPO Long Range Transportation Plan

Overview & Recommendations

Thursday, May 28, 2015

8:30 AM

Performance-based planning

- Reduce Congestion
- Improve Pavement
- Reduce Vehicle Crashes
- Support Modal Choice

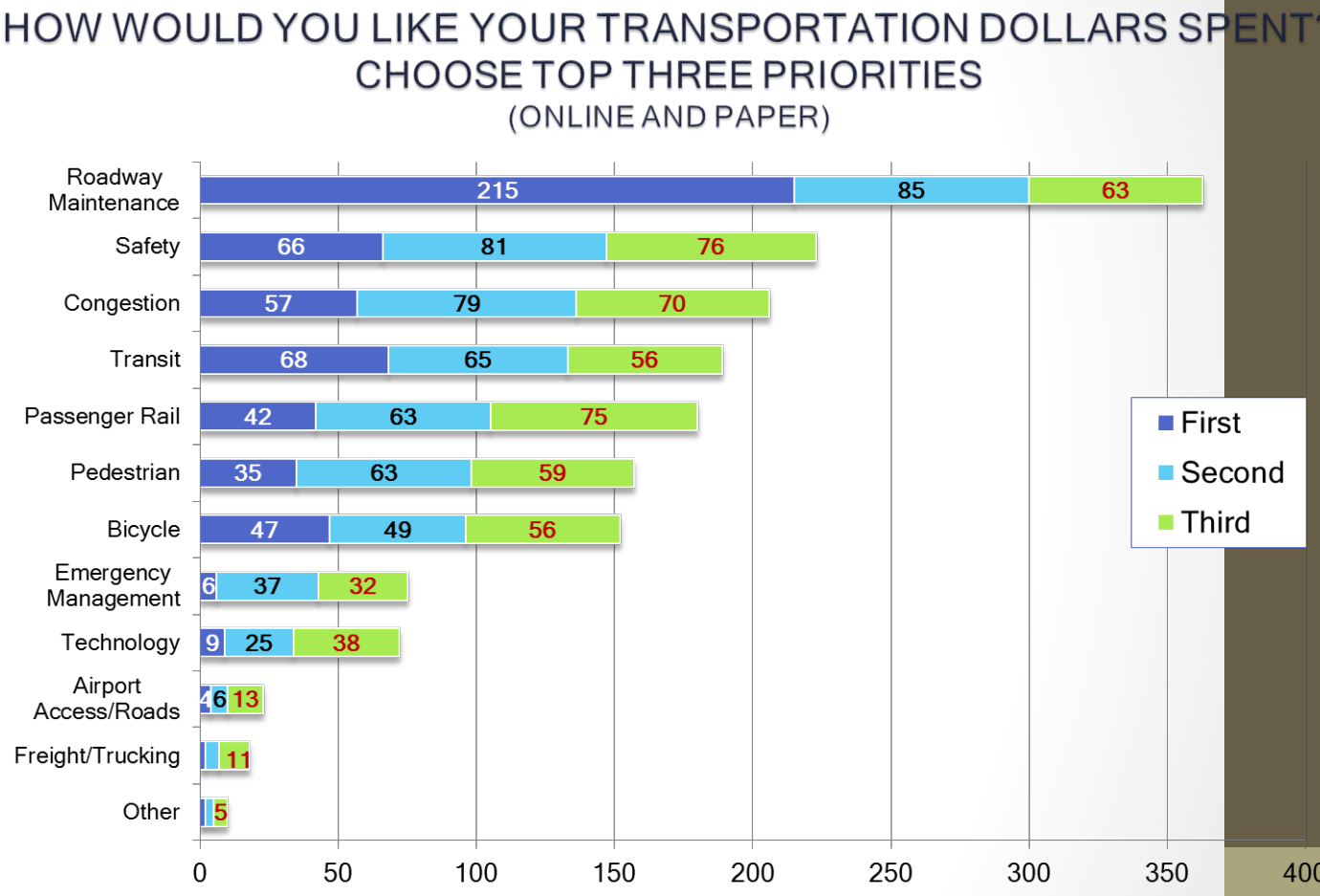
MPO established Goals & Objectives reflects the need to transition to performance-based planning

Public Outreach

- Overall extensive process
- Range of outreach techniques
- Stakeholder meetings

495/MetroWest Partnership: October 2014

- Projects
- Initiatives
- Policies



Projects

- I-495 Interchanges with MassPike (I-90) and Route 9
- Route 9/Lyman Street reconstruction
- Downtown Westborough rotary
- Route 16 congestion Webster
- Documented traffic “night mares”

Initiatives

- Connecting the adjacent RTAs: WRTA & MetroWest
- Need for multi-modal Park and Ride facilities
- Ride Share Opportunities, such as shuttle services

Policies

- Coordinated approach to reducing GHG
- MBTA Commuter Rail role in modal shift
- Advocate increased transit and “last mile” services

Management Systems/ Data Driven Needs

- Heavy Congestion (Model)
- High Traffic Volume
- Worst Pavement Condition
- High Crashes (Auto/Bike/Ped)
- Freight Routes
- High Transit Usage

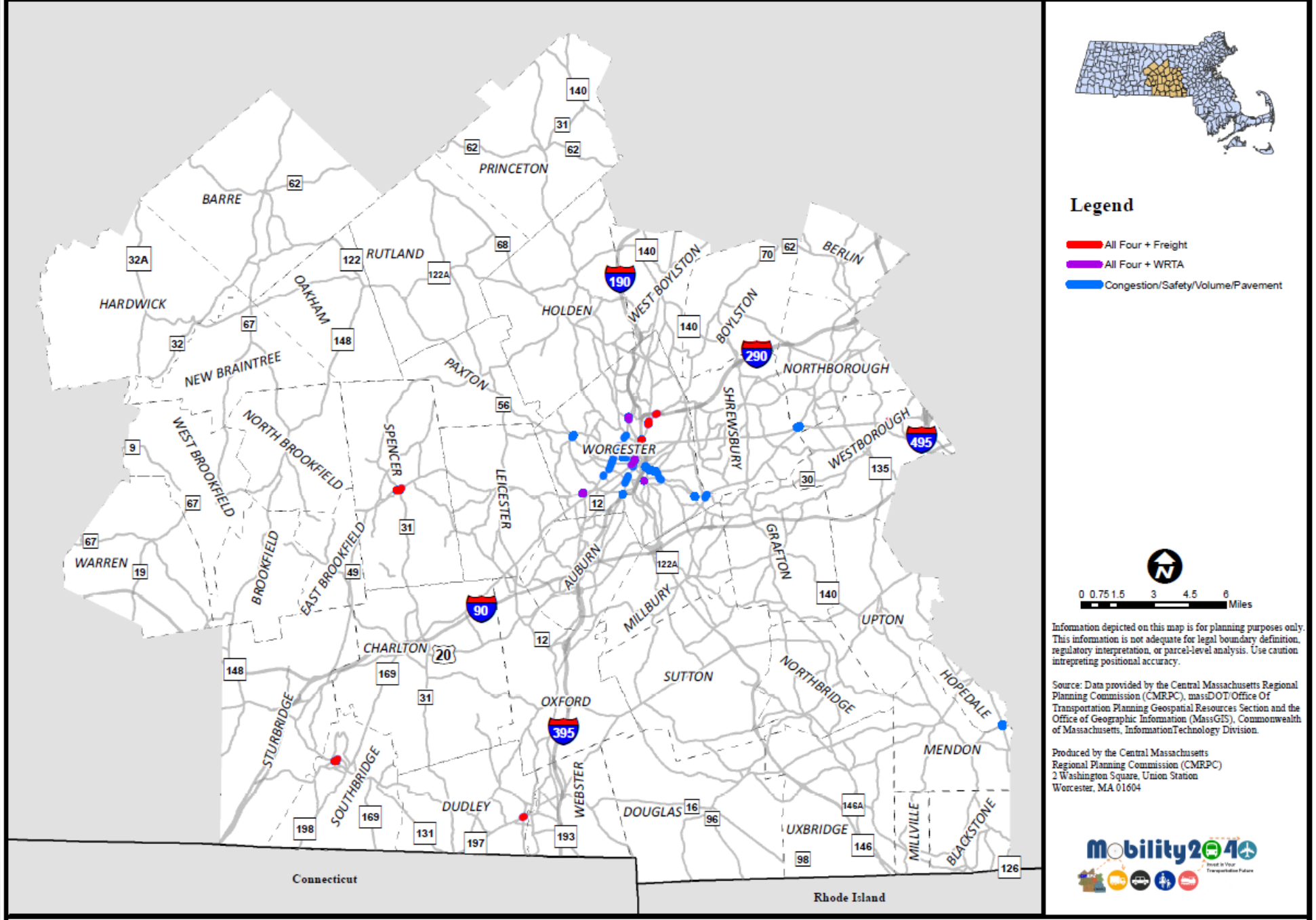


Figure V-1 Management Systems - Data Integration Map

Local Knowledge/ Input Driven Needs

- Staff
- MassDOT
- Public Input
- Other Stakeholders

Individual Focus Area Needs

- Crash Data
- Pavement Condition
- Congestion
- Transit Performance
- ITS

Transit Needs

- Access to Essential Services
  - Comprehensive Service Analysis Recommendations
  - Service Opportunities on the fringe
- Intelligent Transportation Systems
  - Transit Signal Priority
- Congestion
  - Reduce bottlenecks to improve travel times
  - Improvement and expansion of Park and Ride facilities
- Safety and Security
- State of Good Repair
  - Completion of new Maintenance and Operations facility
  - New buses for fleet expansion
- Intercity Transit and Passenger Rail
  - Increase service from Worcester to Providence
  - Connections to other Regional Transit Authorities
  - Extension of commuter rail from Worcester to Springfield

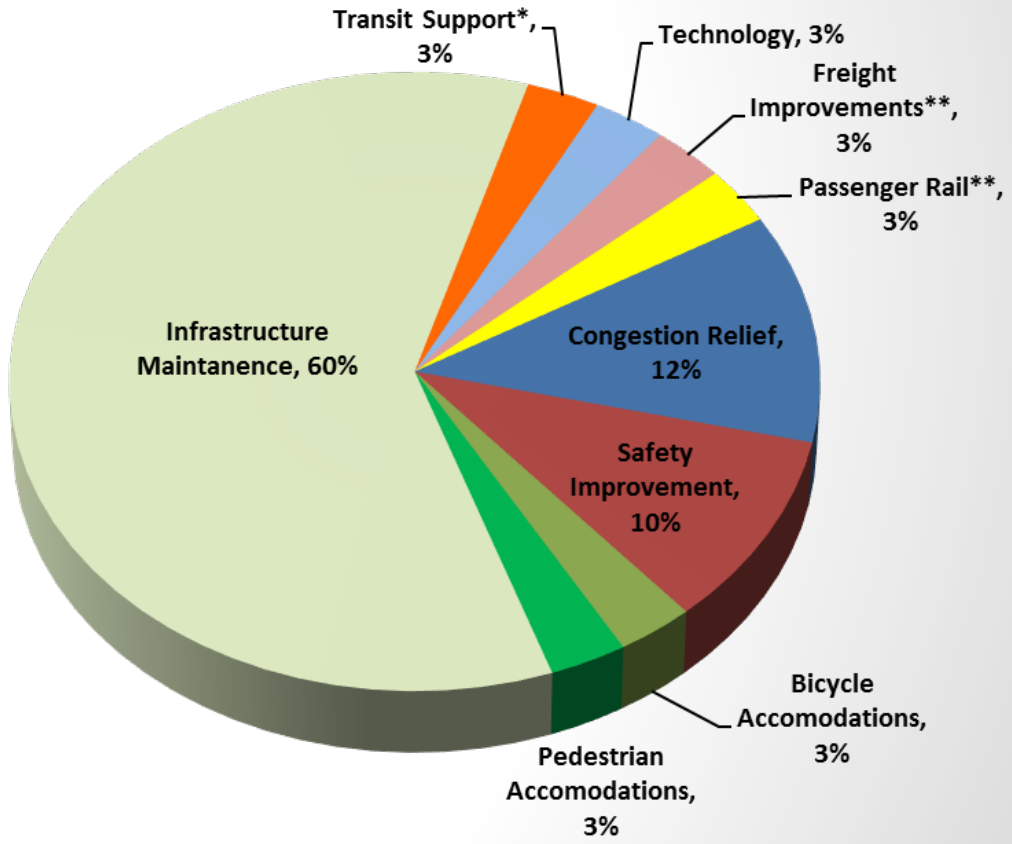
Mobility 2040 Funding Scenario

Planning Assumption ~$580 million over next 25 years

- TIP: community generated projects
- MI: Major Infrastructure

Preferred funding option selected by CMMPO

OPTION 1 – 79% SUPPORTED



Transit Projects

Recommended Implementation Schedule	Option 1	Comments
2015-2020	Route 43 - New route connecting Webster, Dudley, Southbridge, and Sturbridge	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2015-2020	Route 32 - New route to connect Holden with Worcester.	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2020-2025	Route 17 - New route to connect Westborough Office Park, Solomon Pond Mall, and Northborough Crossing (Wegman's).	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2020-2025	Route 44 - Proposed new route to connect colleges: - Becker, WPI, Assumption, WSU, Clark, Holy Corss, Quinsigamond CC	Draft recommendation from the Comprehensive Service Analysis. Implementation of the project is dependent on operating funds available and final approval by the WRTA
2015-2040	New fixed route buses	Replacement or expansion of the WRTA fixed route fleet.

Bicycle and Pedestrian Projects/Initiatives

Recommended Implementation Schedule	Option 1	Comments	Project/Initiative
2015-2020	Boston Worcester Air-Line Trail	TIP or TAP funding ($500k)	Project
2015-2020	Blackstone Rive Greenway (Segments 3,4 and 5)	Staff will pursue an Initiative to collaborate with the lead agency to identify segments, establish costs for each segment and project scope	Initiative
2020-2025	Multimodal Connection: Blackstone River Greenway to Mass-Central Rail Trail	Staff will pursue an Initiative to collaborate with the lead agency to establish costs and project scope	Initiative
2020-2025	Pedestrian Connection: Blackstone River Greenway to Mid-State Trail	Staff will pursue an Initiative to collaborate with the lead agency to establish costs and project scope	Initiative

Commuter Rail Projects/Initiatives

Recommended Implementation Schedule	Option 1	Comments
2020-2025	Worcester-Providence passenger service and railroad improvements	Private Railroad operations and funding
2015-2040	MBTA commuter rail station upgrades	MBTA funding

Freight Rail Projects/Initiatives

Recommended Implementation Schedule	Option 1	Comments
2015-2020	Grafton & Upton Railroad	At-grade highway crossing improvements (Private funding)
2020-2025	Providence & Worcester Railroad	Bridge over Southbridge Street (Private funding)
2015-2040	EB & S Railroad	Various expansion and IRAP track improvements for improved operations (Private funding)
2015-2040	Providence & Worcester Railroad	IRAP track improvements (Private funding)

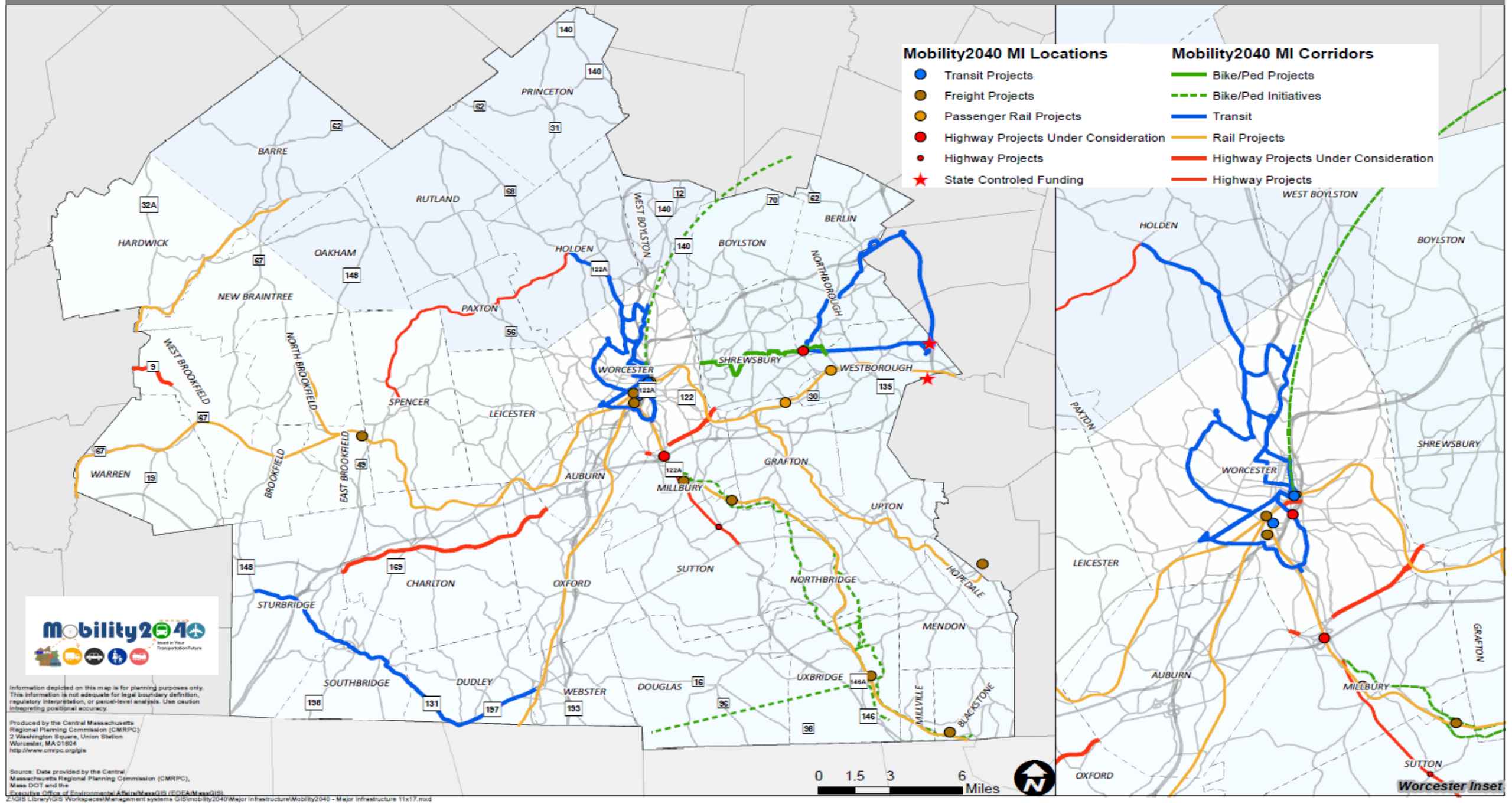
Major Infrastructure Options Considered by the CMMPO

OPTION 1	OPTION 2	OPTION 3
2015-2020 •Route 9 - West Brookfield •No MI project	2015-2020 •Route 9 - West Brookfield •No MI project	2015-2020 •Route 9 - West Brookfield •No MI project
2021-2025 •Route 9 / 20 Interchange - Northborough	2021-2025 •Route 20 widening between Massasoit Rd and Sunderland Rd - Worcester	2021-2025 •Route 20 with median barriers and intersection improvements – Charlton and Oxford
2026-2030 •I-290 / Vernon St / Kelly Square Bridge Expansion - Worcester	2026-2030 •Route 9 / 20 Interchange - Northborough	2026-2030 •Route 20 widening between Massasoit Rd and Sunderland Rd - Worcester
2031-2035 •Route 146 / 20 / MassPike Interchange - Millbury	2031-2035 •I-290 / Vernon St / Kelly Square Bridge Expansion - Worcester	2031-2035 •Route 9 / 20 Interchange - Northborough
2036-2040 •Kelly Square Bypass - Worcester	2036-2040 •Route 146 / 20 / MassPike Interchange - Millbury	2036-2040 •I-290 / Vernon St / Kelly Square Bridge Expansion - Worcester

Planning assumptions

- MassPike/I-495 at ~$220Million to be completed using western turnpike toll revenue
- I-495 bridge over Route 9 currently being improved – additional bridge funding anticipated

Mobility2040 - DRAFT Major Infrastructure Projects



Mobility2040

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Opportunity to Comment

Document release for 30-Day

Public Review and Comment Period

CMMPO Meeting

June 10, 2015 at 4:30 PM
CMRPC, Union Station

Upcoming Public Meeting

LRTP, TIP and UPWP

July 8, 2015 at 6:00 PM
CMRPC, Union Station

Thank You!

Questions or Comments?

Please send any written commentary to CMRPC staff prior to the July 13, 2015 deadline

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Long Range Transportation Plan

CMRPC

CMMPO

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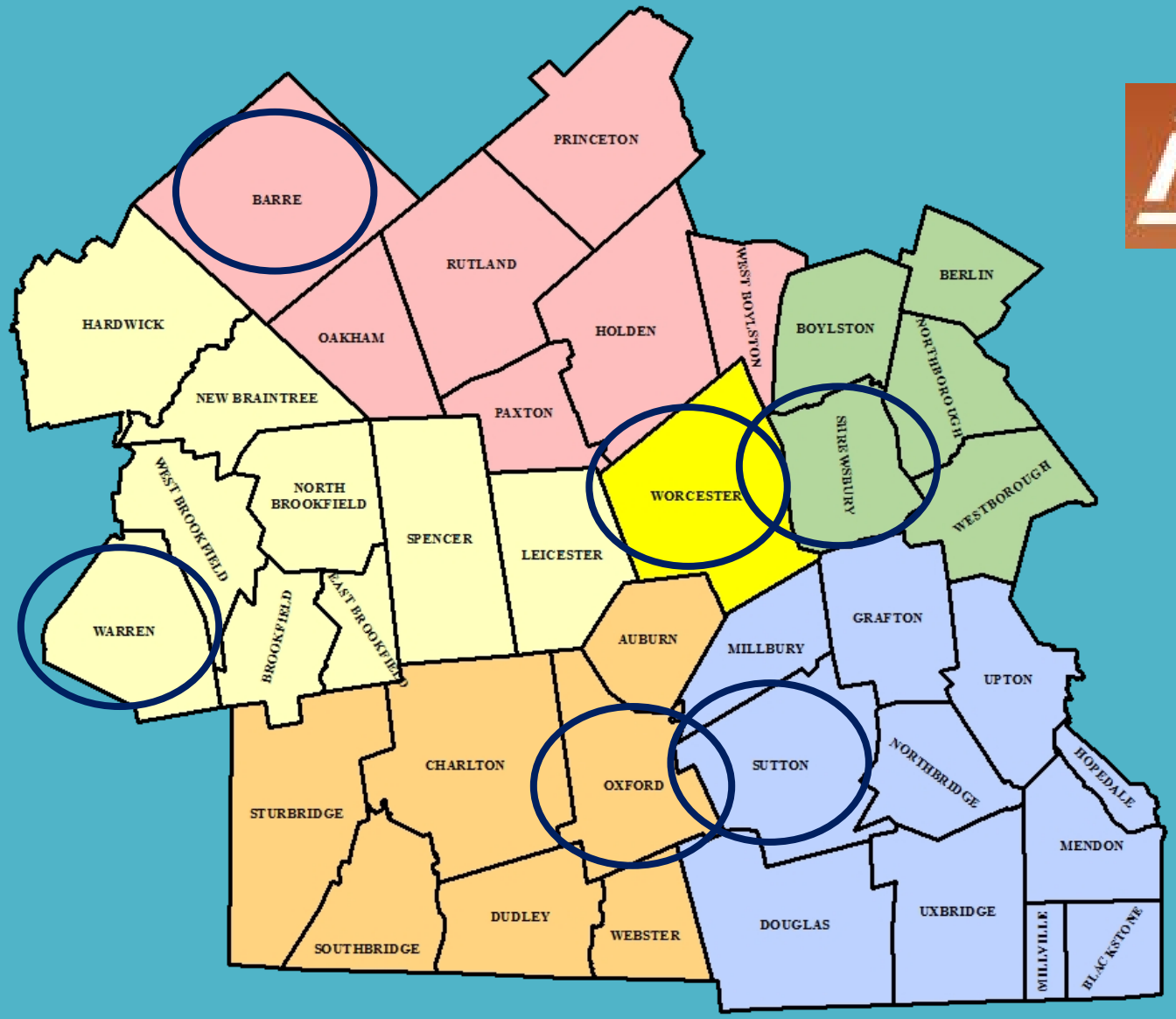

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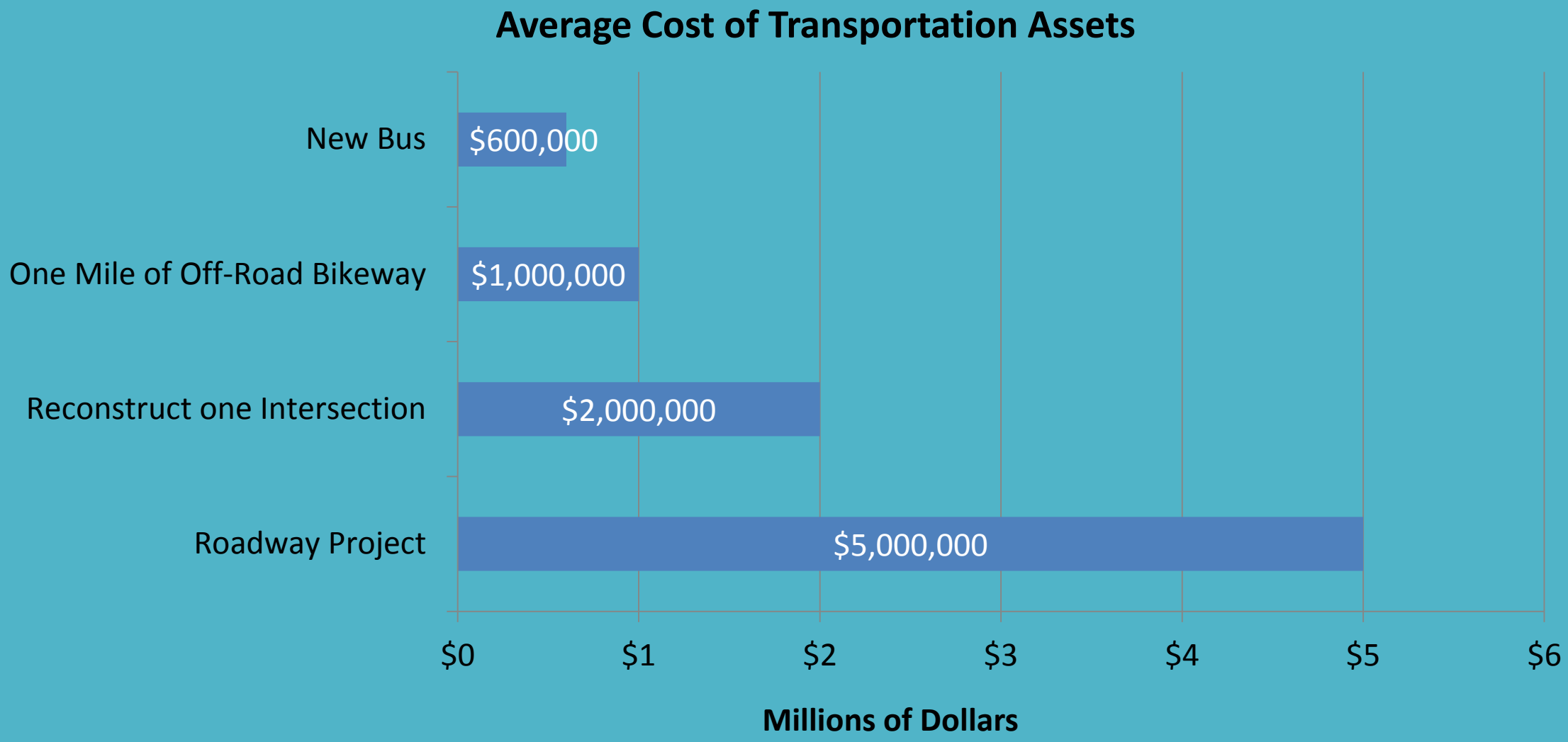

How much does a transportation project cost?

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CMRPC

CMMPO

Stakeholder Feedback

What is important to you, to the region?

- Projects:
  - Improve Sidewalks and Increase the Number
  - Improve Safety of Rte 122 from Worcester to Camp St. Paxton

- Initiatives:
  - Reduce Congestion in Rural Towns
  - Eliminate Real Time Travel Message signs on Turnpike

- Policies:
  - Reduce signage along state roads
  - Reduce no. of traffic signals at intersections
  - Use Cement vs. asphalt and use granite curbing

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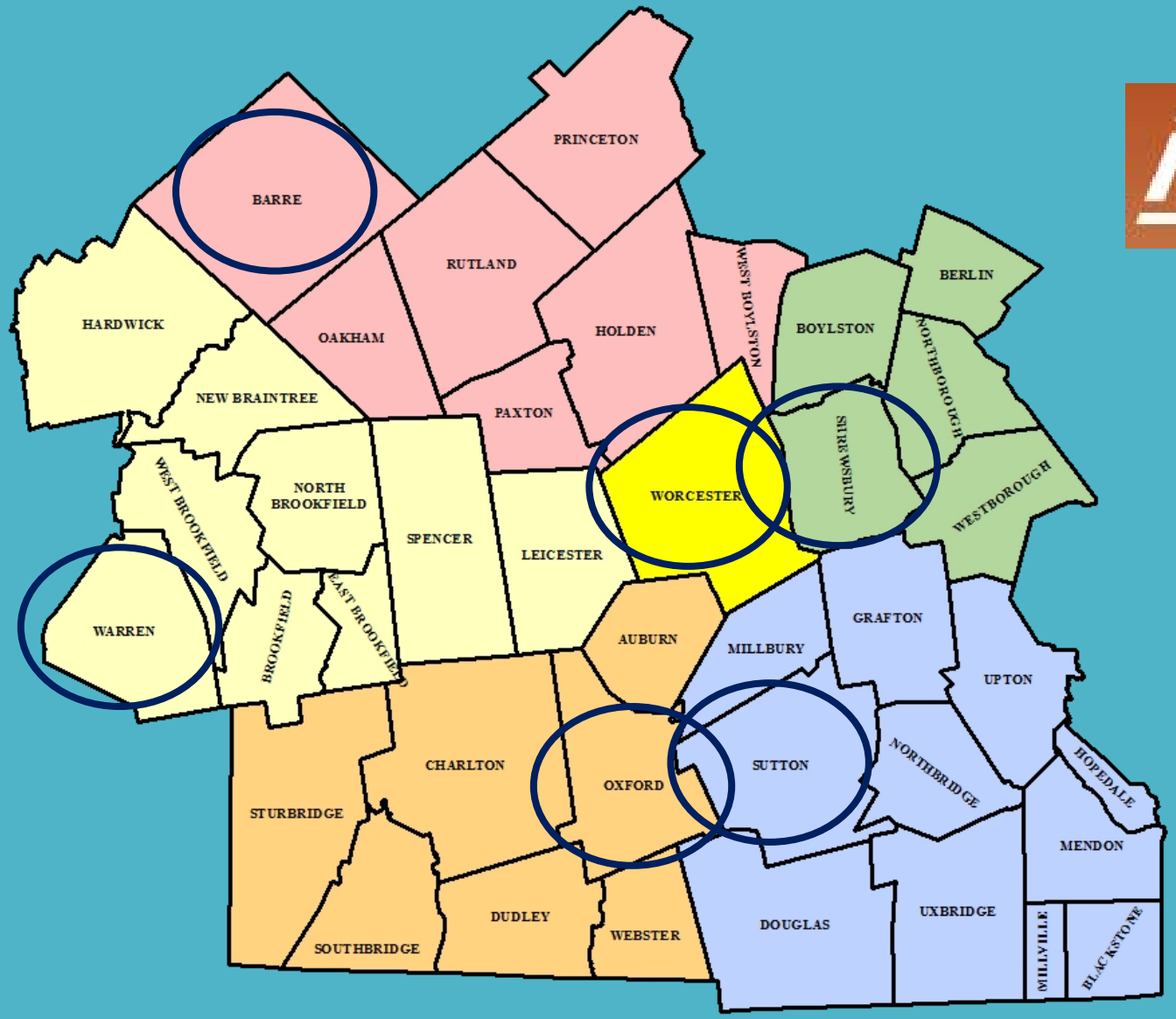

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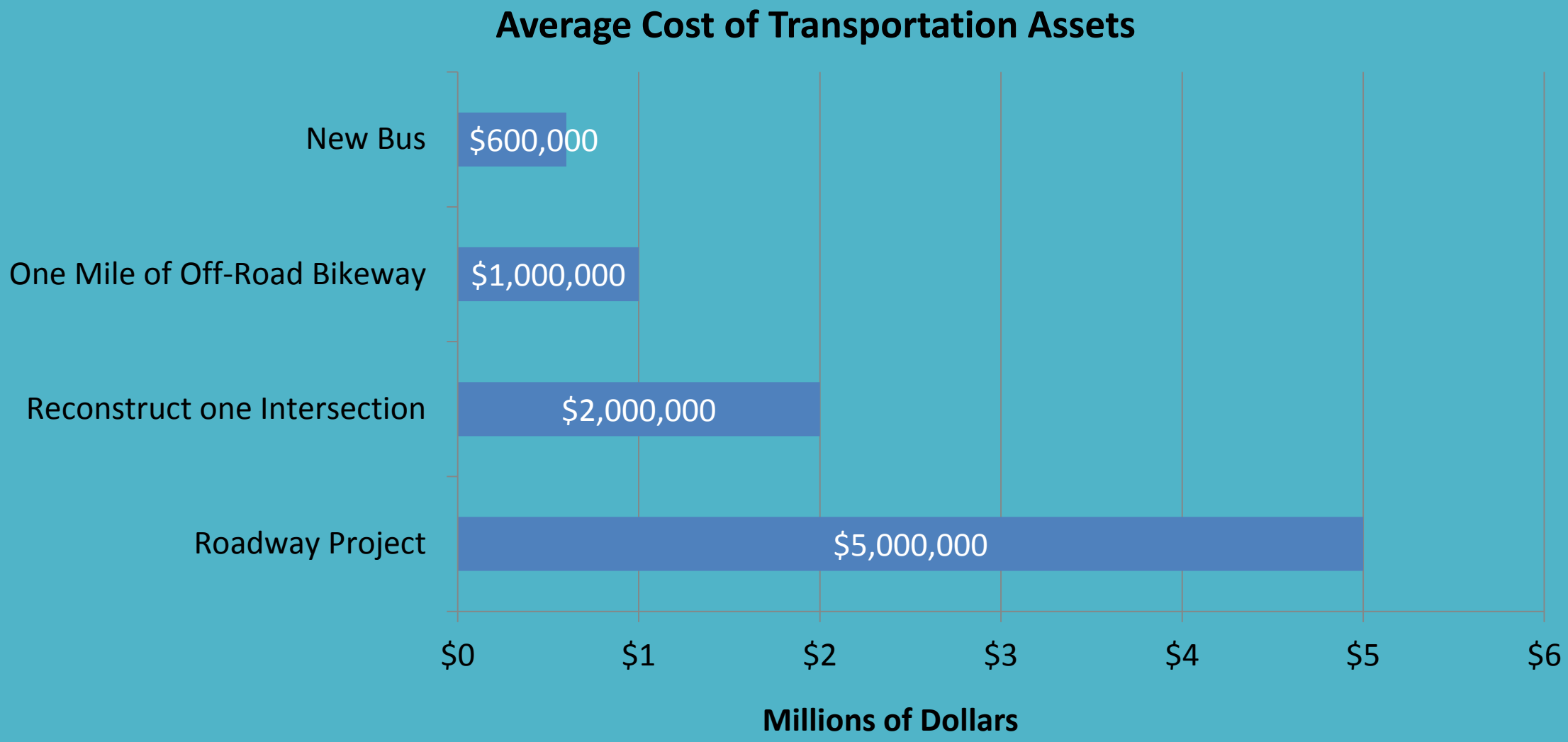

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CMRPC

CMMPO

Stakeholder Feedback – WBW

What is important to you, to the region?

Projects

- Better train connection west to springfield
- Connection by rail to Providence (MBTA or Amtrak)
- Signal upgrades (tech)
- TSP for Transit
- Faster trains (Elect)
- Bike lanes, add protection where possible (West Boylston St, Chandler)

Policies

- More freq bus service in the City, esp around WSU
- WSU Parking issues, anti bike lane in the area (education?)
- Better alt mode planning in the region
- Pedestrians with sight issues, curbing, sidewalks, accessible crossings, technology, vision impaired apps,
- Trees/greenscapes/stormwater issues with streetscapes
- Movement to complete streets policy
- Closer alignment with land use and economic development
- Creating placees where people want to walk

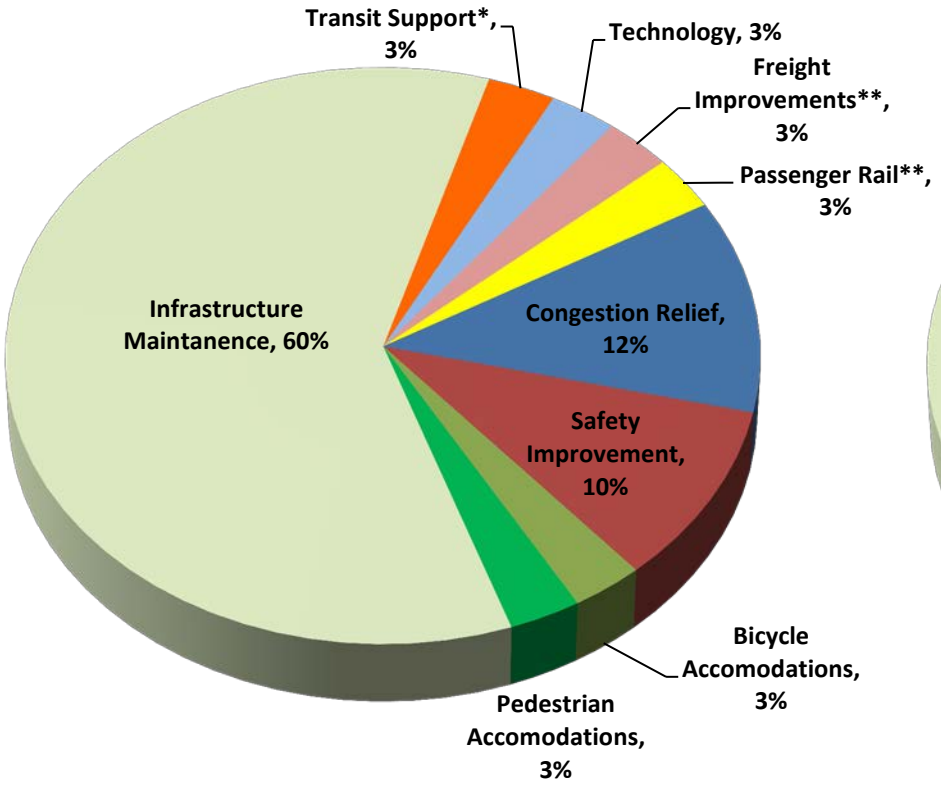
Policies

- Legislation for cyclists and peds, vul users concept
- Idaho y law at stop signs

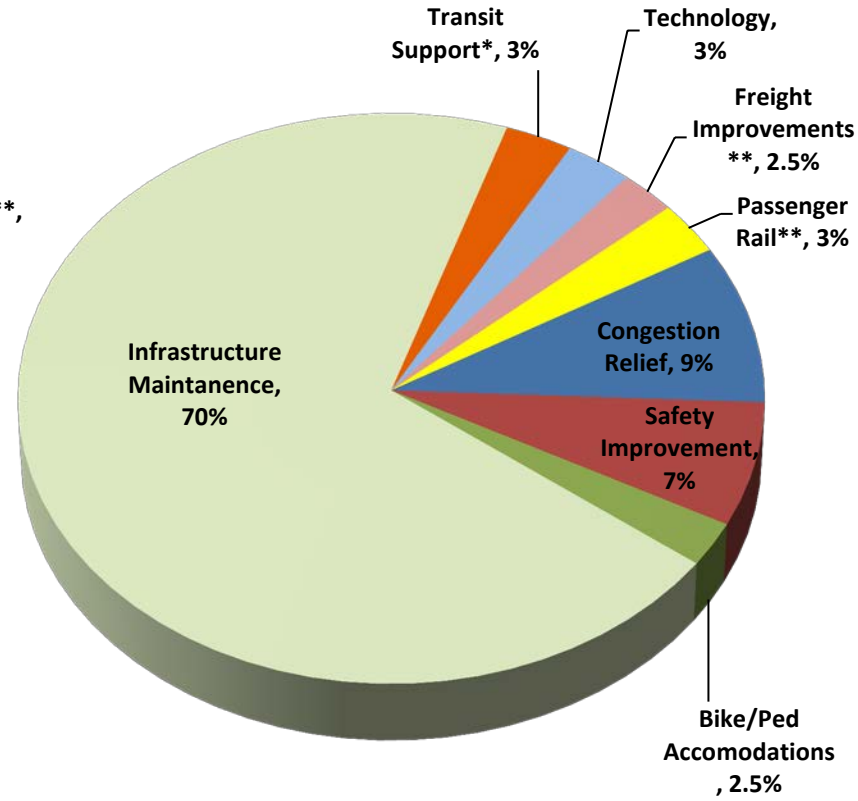
FUNDING SCENARIOS

How would you distribute the available transportation funding across the categories shown below?
(PLEASE CIRCLE ONE OPTION BELOW)

OPTION 1



OPTION 2



* - i.e., (ParknRide, TSP/Signal Coordination, Corridor Improvement, TMA support)
** - Initiatives/Studies, last mile connections etc.

MAJOR INFRASTRUCTURE

Which of the following Major Infrastructure (MI) Roadway Project Options would you like to recommend?
(PLEASE CIRCLE ONE OPTION BELOW)

OPTION 1

2015-2020
- Route 9 - West Brookfield
- No MI project

2021-2025
- Route 9 / 20 Interchange - Northborough

2026-2030
- I-290 / Vernon St / Kelly Square Bridge Expansion - Worcester

2031-2035
- Route 146 / 20 / MassPike Interchange - Millbury

2036-2040
- Kelly Square Bypass - Worcester

OPTION 2

2015-2020
- Route 9 - West Brookfield
- No MI project

2021-2025
- Route 20 widening between Massasoit Rd and Sunderland Rd - Worcester

2026-2030
- Route 9 / 20 Interchange - Northborough

2031-2035
- I-290 / Vernon St / Kelly Square Bridge Expansion - Worcester

2036-2040
- Route 146 / 20 / MassPike Interchange - Millbury

OPTION 3

2015-2020
- Route 9 - West Brookfield
- No MI project

2021-2025
- Route 20 with median barriers and intersection improvements – Charlton and Oxford

2026-2030
- Route 20 widening between Massasoit Rd and Sunderland Rd - Worcester

2031-2035
- Route 9 / 20 Interchange - Northborough

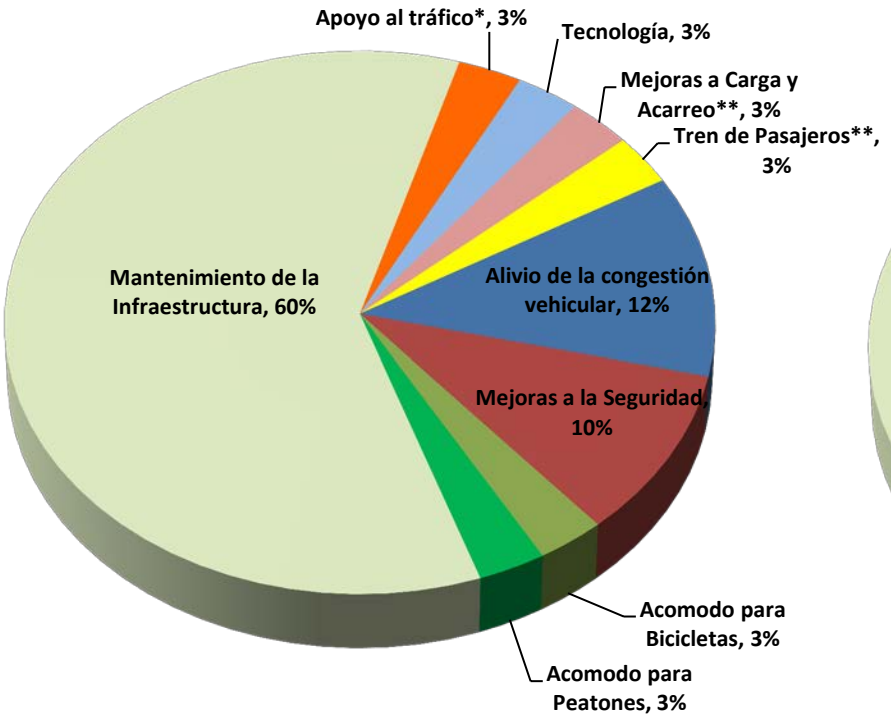
2036-2040
- I-290 / Vernon St / Kelly Square Bridge Expansion - Worcester

Note: It is currently assumed that implementation of the following projects will be pursued using primarily State controlled funding sources.
I - 90 (MassPike)/I - 495 Interchange: Major reconstruction follows removal of tolls (Westborough/Hopinkton) I - 495/Route 9 Interchange: Major reconstruction on ramps with Route 9 improvements (Westborough/Southborough)

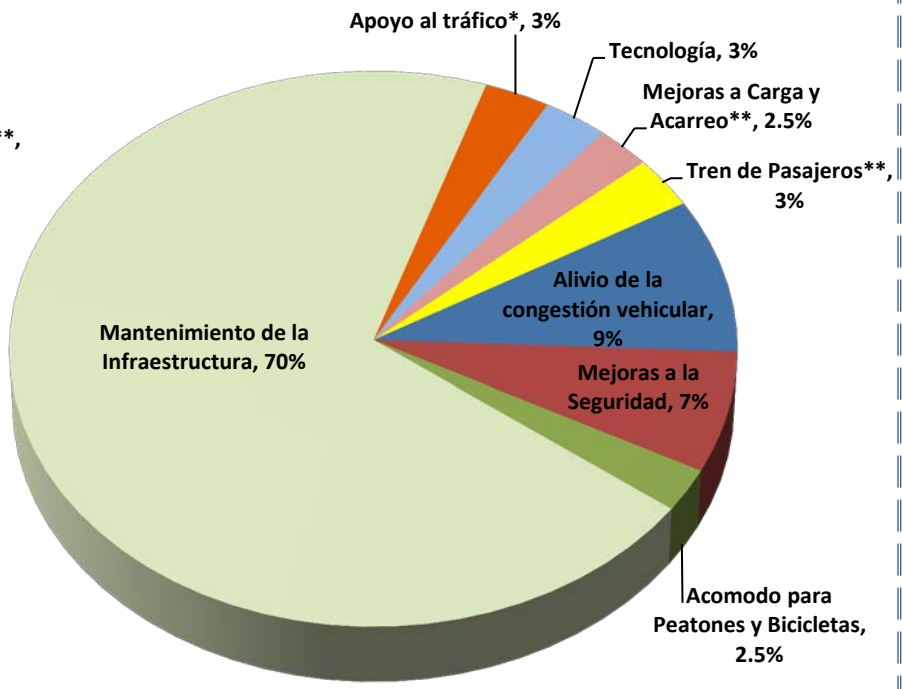
ESCENARIOS DE FONDOS

¿Cómo usted distribuiría los fondos disponibles para proyectos de transportación usando las categorías que se presentan a continuación?
(POR FAVOR CIRCULE SÓLO UNA OPCIÓN)

OPCIÓN 1


Apoyo al tráfico*, 3%
Tecnología, 3%
Mejoras a Carga y Acarreo**, 3%
Tren de Pasajeros**, 3%
Alivio de la congestión vehicular, 12%
Mejoras a la Seguridad, 10%
Acomodo para Bicicletas, 3%
Acomodo para Peatones, 3%
Mantenimiento de la Infraestructura, 60%

OPCIÓN 2


Apoyo al tráfico*, 3%
Tecnología, 3%
Mejoras a Carga y Acarreo**, 2.5%
Tren de Pasajeros**, 3%
Alivio de la congestión vehicular, 9%
Mejoras a la Seguridad, 7%
Acomodo para Peatones y Bicicletas, 2.5%
Mantenimiento de la Infraestructura, 70%

*Ejemplo (Park-n-Ride, TSP/Coordinación de Señales de Tránsito, Mejoras a Corredores, Apoyo TMA
** Iniciativas / Estudios, conexiones de la "última milla", entre otros.

GRAN INFRASTRUCTURA

¿Cuál de las opciones de Proyectos de Gran Infraestructura de Carreteras usted recomendaría?
(POR FAVOR CIRCULE SÓLO UNA OPCIÓN)

OPCIÓN 1

2015-2020
- Ruta 9 - West Brookfield
- Ningún proyecto mayor

2021-2025
- Ruta 9 / 20 Intercambio Vial - Northborough

2026-2030
- I-290 / Vernon St / Kelly Square Expansión del Puente - Worcester

2031-2035
- Ruta 146 / 20 / MassPike Intercambio Vial - Millbury

2036-2040
- Kelly Square Bypass - Worcester

OPCIÓN 2

2015-2020
- Ruta 9 - West Brookfield
- Ningún proyecto mayor

2021-2025
- Ruta 20 ensanche entre Massasoit Rd y Sunderland Rd - Worcester

2026-2030
- Ruta 9 / 20 Intercambio Vial - Northborough

2031-2035
- I-290 / Vernon St / Kelly Square Expansión del Puente - Worcester

2036-2040
- Ruta 146 / 20 / MassPike Intercambio Vial - Millbury

OPCIÓN 3

2015-2020
- Ruta 9 - West Brookfield
- Ningún proyecto mayor

2021-2025
- Ruta 20 con isletas y mejoras a las intersecciones – Charlton and Oxford

2026-2030
- Ruta 20 ensanche entre Massasoit Rd y Sunderland Rd - Worcester

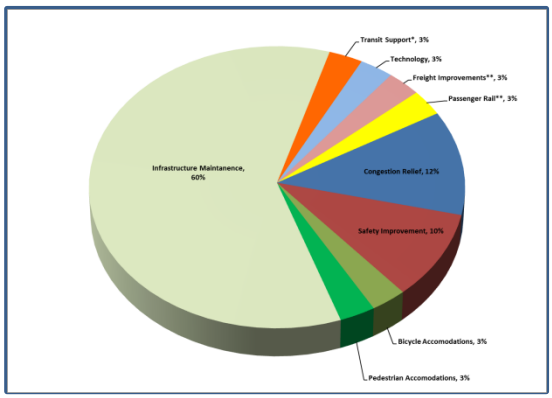
2031-2035
- Ruta 9 / 20 Intercambio Vial - Northborough

2036-2040
- I-290 / Vernon St / Kelly Square Expansión del Puente - Worcester

Nota: Al día de hoy se asume que la implantación de los siguientes proyectos de carreteras se realizarán utilizando los fondos controlados de carreteras del Estado de Massachusetts como fuente principal de fondos.
I - 90 (MassPike)/I - 495 Intercambio Vial: Reconstrucción mayor y remoción de plazas de peaje (Westborough/Hopinkton)
I - 495/Ruta 9 Intercambio Vial: Reconstrucción mayor en las rampas y mejoras la Ruta 9 (Westborough/Southborough)

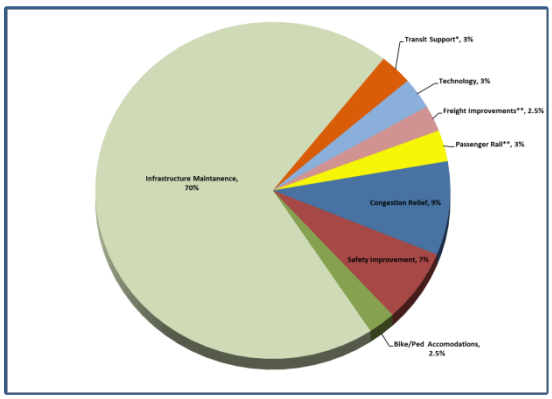
Funding Allocation

OPTION 1



Category	Funding Allocation
Congestion Relief	12%
Safety Improvement	10%
Bicycle Accomodations	3%
Pedestrian Accomodations	3%
Infrastructure Maintanence	60%
Transit Support*	3%
Technology	3%
Freight Improvements**	3%
Passenger Rail**	3%

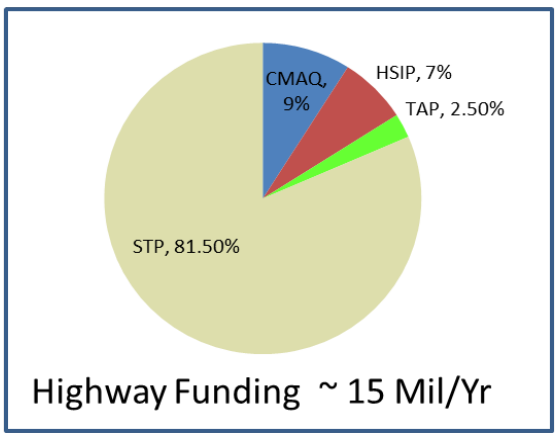
OPTION 2

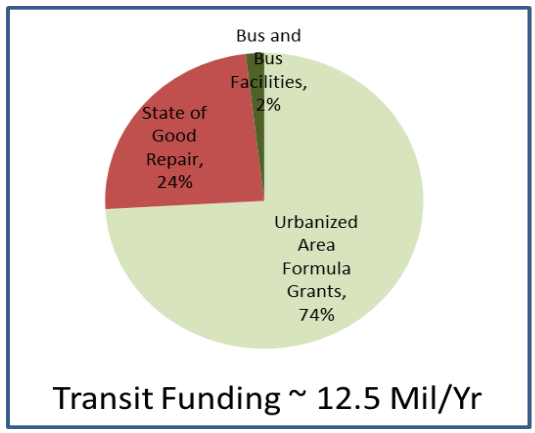


Category	Funding Allocation
Congestion Relief	9%
Safety Improvement	7%
Bike/Ped Accomodations	2.5%
Infrastructure Maintanence	70%
Transit Support*	3%
Technology	3%
Freight Improvements**	2.5%
Passenger Rail**	3%

* - i.e., (ParknRide, TSP/Signal Coordination, Corridor Improvement, TMA support)
** - Initiatives/Studies, last mile connections etc.

Current Funding Available





HIGHWAY

- Congestion Mitigation and Air Quality (9% minimum)
- Highway Safety Improvement Program (7% minimum)
- Transportation Alternatives Program (2.5%)
- Surface Transportation Program (81.5%)

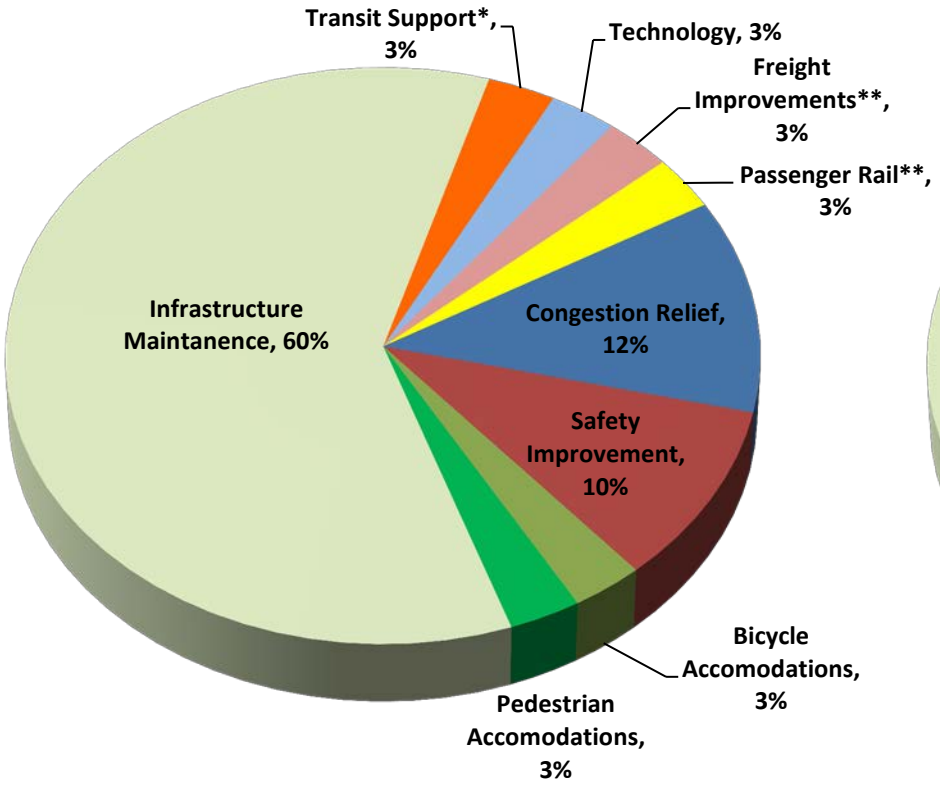
TRANSIT

- Urbanized Area Formula Grants (5307)
- State of Good Repair Grants (5337)
- Bus and Bus Facilities (5339)

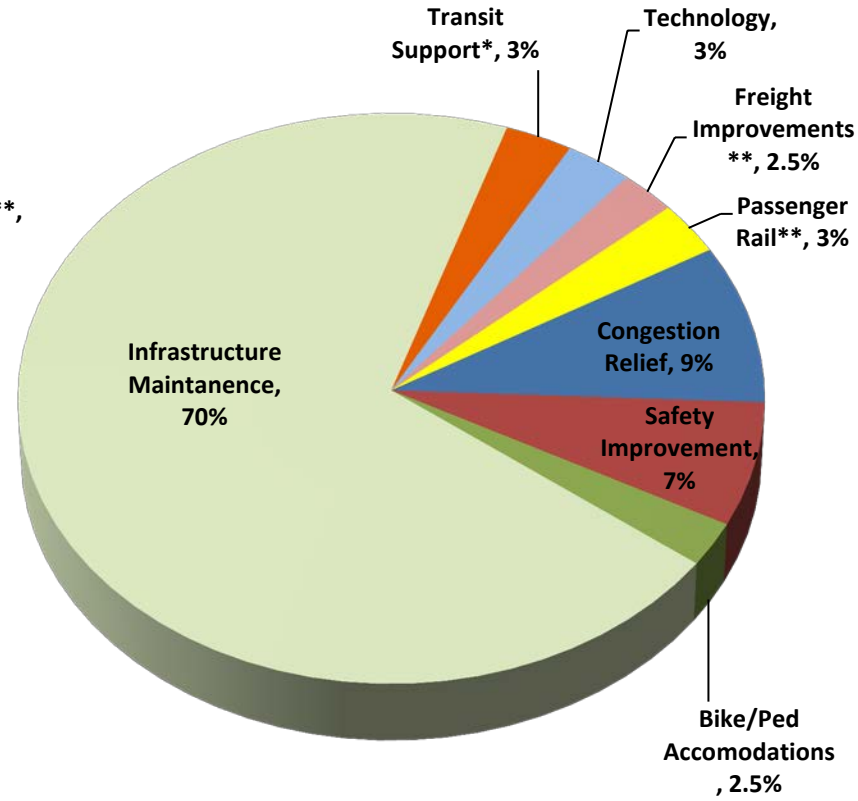
FUNDING SCENARIOS

How would you distribute the available transportation funding across the categories shown below?
(PLEASE CIRCLE ONE OPTION BELOW)

OPTION 1 – 79% SUPPORTED



OPTION 2 – 21% SUPPORTED



* - i.e., (ParknRide, TSP/Signal Coordination, Corridor Improvement, TMA support)
** - Initiatives/Studies, last mile connections etc.

MAJOR INFRASTRUCTURE

Which of the following Major Infrastructure (MI) Roadway Project Options would you like to recommend?
(PLEASE CIRCLE ONE OPTION BELOW)

OPTION 1 – 59% SUPPORTED

2015-2020
- Route 9 - West Brookfield
- No MI project

2021-2025
- Route 9 / 20 Interchange - Northborough

2026-2030
- I-290 / Vernon St / Kelly Square Bridge Expansion - Worcester

2031-2035
- Route 146 / 20 / MassPike Interchange - Millbury

2036-2040
- Kelly Square Bypass - Worcester

OPTION 2 – 18% SUPPORTED

2015-2020
- Route 9 - West Brookfield
- No MI project

2021-2025
- Route 20 widening between Massasoit Rd and Sunderland Rd - Worcester

2026-2030
- Route 9 / 20 Interchange - Northborough

2031-2035
- I-290 / Vernon St / Kelly Square Bridge Expansion - Worcester

2036-2040
- Route 146 / 20 / MassPike Interchange - Millbury

OPTION 3 – 23% SUPPORTED

2015-2020
- Route 9 - West Brookfield
- No MI project

2021-2025
- Route 20 with median barriers and intersection improvements – Charlton and Oxford

2026-2030
- Route 20 widening between Massasoit Rd and Sunderland Rd - Worcester

2031-2035
- Route 9 / 20 Interchange - Northborough

2036-2040
- I-290 / Vernon St / Kelly Square Bridge Expansion - Worcester

Note: It is currently assumed that implementation of the following projects will be pursued using primarily State controlled funding sources.
I - 90 (MassPike)/I - 495 Interchange: Major reconstruction follows removal of tolls (Westborough/Hopinkton) I - 495/Route 9 Interchange: Major reconstruction on ramps with Route 9 improvements (Westborough/Southborough)

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By Brian Lee TELEGRAM & GAZETTE STAFF

May 03. 2015 6:00AM

Promised Route 20 upgrades in Charlton, Oxford are long awaited

Lisa Brodeur of Charlton said she doesn't blame the dangerous Route 20 for a 1997 accident that claimed her husband's life and left her son Kyle, who has since had 25 surgeries, paralyzed.

PHOTO/ CHRIS CHRISTO

The Brodeur family, standing from left, Katie, Lisa and Kimberly. Seated is Kyle. Lisa Brodeur of Charlton said she is appreciative of the state's plans to improve Route 20 in Charlton and Oxford, where a 1997 crash involving a drunken driver claimed her husband's life and left her son Kyle paralyzed.

Rather, Mrs. Brodeur blames the drunken driver who slammed into the Brodeurs' vehicle.

Still, the mother expressed appreciation for the state's progressing preliminary effort to widen and partition Route 20 in Charlton and Oxford.

"The other day I was riding up there and I was looking at all the barriers that they already put up since our accident," the mother said. "I was saying to my daughter: 'Could you just imagine if these barriers were where our accident was?'"

A state Department of Transportation spokesman said the commonwealth has designed 25 percent of an estimated $42 million reconstruction of Route 20 that would extend from Richardson Corner Road in Charlton 3.2 miles eastward to Route 12 in Oxford.

The proposal includes full-depth reconstruction with major widening and geometric improvements, traffic-signal installation, bridge reconstruction and rehabilitation and installation of a median barrier.

Mary Ellen Blunt, transportation program manager with the Central Massachusetts Regional Planning Commission in Worcester, said the project was part of "an entire look at Route 20."

The idea was to improve Route 20 at least 10 years ago, she said. Pieces of that project already upgraded a western portion of Charlton, and more recently in Auburn and Oxford.

Because of funding constraints the past 10 to 15 years, these types of projects kept getting divided into smaller pieces, Ms. Blunt said.

Michael Verseckes, the DOT spokesman, said there is a significant accident history along the corridor, with a considerable amount of accidents of higher severity due to crossover collisions.

The spokesman was unable to provide accident statistics.

In March, the state filed an Environmental Notification Form for the project under the Massachusetts Environmental Policy Act.

An ENF is an initial filing that provides information about a project in hopes that MEPA doesn't find issues significant enough to trigger a more extensive environmental impact report filing.

Mr. Verseckes said the ENF certificate is expected to be issued in May.

The project has been listed in the Central Massachusetts Metropolitan Planning Organization's long-range transportation plan, but there is currently no funding identified for construction, he said.

MPOs are funding conduits established through federal legislation for major infrastructure projects, to ensure that decisions are being made at the local level.

Charlton Town Planner Alan Gordon said he attended a meeting several years ago in Oxford during which a state consultant presented a low-level design of the project.

Property owners were invited to be shown temporary construction easements for which the state contemplates limited land takings.

Mr. Gordon recalled that the consultant wanted to save money on the project by installing "old-fashioned" metal guardrails in the middle of the road instead of the concrete medians in Charlton from the earlier project.

Charlton's police and fire chiefs and its planning board expressed concerns.

Charlton Police Chief James A. Pervier said he spoke to local legislators about his concern about guardrails not containing vehicles in accidents.

The barriers, he said, are "the best thing in place" to prevent drivers from departing the lane for head-on collisions, whether from drunken driving, falling asleep, or spinning out of control.

"It's such a heavily traveled road, and when the Mass. Pike shuts down because of a rollover or something, they jump off in Auburn and Sturbridge, and Route 20 gets really gridlocked," the chief said.

"Just for normal traffic and overflow from the Pike that we get at different times ... the Jersey barriers are really, really needed, and I'd rather see it happen sooner than later because of the speed there."

According to Mr. Gordon, the state was not initially planning to put "crossovers" within the length of the more than 3-mile project.

But Oxford and Charlton business owners were concerned about the adverse impact that might have, so the state said it would be willing to modify the concept "and allow, in each community, keeping one intersection open along that current route," Mr. Gordon said.

The concessions on Jersey barriers and openings in both towns were put in writing, according to the planner.

"They committed that they would do that, so when the 75-percent design plans come out, we want to take a good look at that," Mr. Gordon said, adding that the Planning Board appreciated the state listening to local officials during the early stages.

Businesses and residents who spoke to the newspaper said enhancing the road's safety with partitions was more important than the convenience of being able to turn onto the opposite side of the road.

Timothy Gingras, the owner of pet resort Barkwood Inn on Route 20 in Charlton, said he favors the proposal, but called it a "a double-edged sword."

Mr. Gingras acknowledged that his business is within a dangerous bend on Route 20, but as a business owner, he said, "it's certainly inconvenient with Jersey barriers."

Mr. Gingras said his service-specific company wasn't likely to be hurt by the partition. But retail businesses up the road would, he said.

"If I was maybe a convenience store and there were other choices, I wouldn't go all the way around to get a gallon of milk," he said. "I would just go up the road, even if I had to spend 25 cents more."

Route 20 resident Kelley Leonard-Coffin of Oxford said of the proposal: "It'll be inconvenient but it's absolutely necessary. I can't tell you how many people have hit my fence. There are accidents here daily."

Ms. Leonard-Coffin, who's lived on Route 20 about 15 years, said the road is treacherous for her son, who's new to driving. She had to direct him out of the driveway last winter, and she's afraid to have a dog.

"In this area right here, for some-odd reason, they're going from 0 to 100 and even though you can clearly see people live on this road ... there's a sense that this is a highway entitlement type of thing. But I think having that partition could possibly" improve the situation.

Ms. Leonard-Coffin lives across from Thayer Pond townhouses, which are on the westbound side of Route 20, and whose residents generally create difficulty for traffic, she said.

"They need to take a left. I understand that. If there was a partition you couldn't do that. They'd have to take a right, and it would keep traffic flowing probably better.

Melissa Carlson, another Oxford resident of Route 20, said she believed a partition in the road would reduce rush-hour backup from people using Route 20 as an alternative to go from the turnpike to Interstate 84 in Sturbridge.

"It would give people a little more leeway — cars to ride and move," she said. "It might do some good."

In addition, Ms. Carlson suggested that snowplow drivers would benefit from having more room to put the snow. She pointed across the road to a crushed guardrail that she said a plow driver had struck this winter.

Meanwhile, the project is many years away from receiving funding, according to Ms. Blunt.

The MPO has about $18 million a year pooled for projects, Ms. Blunt said.

The involved, higher level Charlton-Oxford project would never be arranged for one year, she said.

In June, she said, the organization is releasing its 20-year regional transportation plan that will discuss the readiness of the project, available funding, competing projects, and which of the projects it is considering best meet regional goals and priorities.

"The next step will be to develop some scenarios and model those so that it will help us look at the benefit of the projects versus what it's going to cost to put the project in," Ms. Blunt said. "If it makes it through this step, then it has a greater likelihood of being funded in the next five to 10 years."

Contact Brian Lee at brian.lee@telegram.com. Follow him on Twitter at @BLeeTG.

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http://www.telegram.com/article/20150503/NEWS/305029770

Print Page

Date: July 8, 2015
Location: CMRPC, 2 Washington Square / Union Station, Worcester
Topic: Open Public Meeting re:
CMMPO Federal Certification Documents Public Meeting: Draft LRTP Mobility2040, Draft 2016 - 2019 TIP, Proposed Amendment #4 to 2015 - 2018 TIP, Draft 2016 UPWP, and Draft 2015 POP

Attendance: Rich Rydant, CMRPC Staff
Kevin Krasnecky, CMRPC Staff
Gerald Powers, Walk Bike Worcester
Nicholas Guerra, Congressmen McGovern Office
Dario Nardi, Warren Selectmen
Joe Borbone, City of Worcester
Richard Kerver, Worcester
Blythe Robinson, Town of Upton
Vincent Roy, Town of Upton
Jo Hart, Unaffiliated
Fred Litchfield, Town of Northborough
Isabel McCauley, Town of Holden
Karin Valentine Goins, Walk Bike Worcester

An **OPEN PUBLIC MEETING** regarding the ***Draft Long Range Transportation Plan (LRTP) Mobility2040***, the development and contents of the ***Draft 2016-2019 Transportation Improvement Program (TIP)***, proposed amendment #4 to the ***CMMPO Endorsed 2015-2018 Transportation Improvement Program (TIP)***, the ***Draft 2016 Unified Planning Work Program (UPWP)***, and the ***Draft 2015 Public Outreach Program (POP)*** was held on July 8, 2015 beginning at 5:05 PM.

Rich Rydant began the session with around-the-room introductions. He noted we were there to discuss the above listed documents. The first topic discussed was the Draft Long Range Transportation Plan Mobility2040. Mr. Rydant gave a brief presentation of the contents of the document and then asked if there were any public comments. The following were comments made by those in attendance regarding the LRTP:

- Nicholas Guerra, Congressmen McGovern's office, said that the Congressmen supports the national Complete Streets movement and would like to see pedestrian and bicycle opportunities incorporated into the LRTP and potential projects.

- Richard Kerver, Worcester resident, said he is advocating for a bike friendly city. Mr. Kerver said he likes the progress he has seen and agrees with the incorporation of bicycle and pedestrian improvements that are included in the Major Infrastructure projects.

- Jo Hart, Worcester resident, asked about truck fatalities and solutions to prevent them, such as excluding them on certain roadways since some streets are just too narrow for trucks to drive on. She wondered if MassDOT can do something about this. There is also a need to define truck routes and there should be signage

along these routes. Ms. Hart also asked if the crash data that CMRPC has produced in the past has been updated. Mr. Rydant told her that it has been updated to some extent. Next, Ms. Hart asked about the Shrewsbury Trolley Trail proposal and Mr. Rydant said he had a report about that and he could provide her a copy. Lastly, she asked why P&W Railroad was not doing passenger service from Providence to Worcester. Mr. Rydant commented that P&W has more need for freight movement at this time. Further, it would also cost a substantial amount of money to upgrade the current tracks for passenger rail. P&W would seek public money for these improvements beyond those necessary for freight.

- Karen Valentine Goins, Walk Bike Worcester, commented that she was glad to see the increase in bicycle and pedestrian activities and would like more in the future. She also talked about how there is congestion for cars, but there doesn't seem to be much talk about congestion for bicycles.

The next topic discussed was the Draft 2016 - 2019 TIP. Mr. Rydant talked briefly about the document and the highway and transit project lists and then asked for public comments. The following were comments made by the public:

- Blythe Robinson, Upton Town Administrator, said that she was excited for the Upton TIP project for Hartford Ave/High St/Hopkinton St making it onto FY 2019. She also said the town will make sure the project continues to move forward.

The 2015 to 2018 TIP Amendment #4 was discussed next. Mr. Rydant told the group what the proposed changes were and then asked for public comment. The following were comments made by the public:

- Gerald Powers, Walk Bike Worcester, said he attended the Road Safety Audit (RSA) for the Sturbridge Route 20 project and asked if the scope of the project changed at all in regards to bicycle and pedestrian accommodations. At the time of the RSA, the project did not include bicycle and pedestrian improvements. Mr. Rydant said that according to MassDOT District #3 there will be some bicycle and pedestrian accommodations around the entrance to the Wal-Mart plaza.

Next, the UPWP was discussed. Mr. Rydant gave a brief summary of our work program and then asked for any comments. There were no comments received regarding the UPWP.

The last item that was discussed was the Public Outreach Plan. Mr. Rydant gave a summary of what the POP includes and then asked if there were any comments. The following were comments made by the public:

- Jo Hart, Worcester resident, asked if we thought more people would attend meetings if they were later at night. Mr. Rydant said we would keep that in mind for future meetings.

The public meeting ended at 6:06 PM.

Central Massachusetts
Metropolitan Planning Organization

MEETING OF THE CENTRAL MASSACHUSETTS
METROPOLITAN PLANNING ORGANIZATION

MOBILITY 2040 PUBLIC MEETING

Date: Wednesday, **April 29**, 2015
Time: **6:00 PM**
Place: CMRPC, Union Station, 2 Washington Square, 2nd Floor, Worcester, MA

AGENDA

- Around the Room Introductions

- Mobility 2040 – Long Range Transportation Plan
  - Plan Overview
  - Public Outreach process – Review of Survey Results
  - Review of Recommended Projects, Initiatives, and Studies
  - Review of Recommended Allocation of Funding Priorities across Categories
    - (i.e. safety, state of good repair, bicycle and pedestrian)
  - Review of Recommended Financial Scenarios for Regional Transportation Model

- Public Discussion of Recommendations & Feedback

- Future Meetings:
  - MPO Advisory Committee meeting – Wednesday, May 20th at 3:00 PM
  - CMMPO Meeting – Discussion of Mobility2040 – Wednesday, May 20th at 4:30 PM
  - CMMPO Meeting to Release Mobility2040 for Public Review – Wednesday, June 10th at 4:30 PM
  - CMMPO Meeting to Endorse Mobility2040 – July 15th

- Adjournment

CMMPO meetings are conducted in accessible locations and materials can be provided in accessible formats. If you would like special accommodations, such as an interpreter, please contact the CMMPO at: (508) 459-3338, or nburnham@cmrpc.org at least 3 days prior to the meeting.

The CMMPO fully complies with Title VI of the Civil Rights Act of 1964 and related statutes and regulations in all programs and activities. The CMMPO does not discriminate on the basis of race, color, national origin, English proficiency, income, religious creed, ancestry, disability, age, gender, sexual orientation, military service, or gender identity or expression. Any person who believes himself/herself or any specific class of persons have been subjected to discrimination prohibited by Title VI or related statutes or regulations may, himself/herself or via a representative, file a complaint with the CMMPO. A complaint must be filed no later than 30 calendar days after the date on which the person believes the discrimination occurred.

CENTRAL MASSACHUSETTS METROPOLITAN PLANNING ORGANIZATION
Mobility 2040: Long Range Transportation Plan: Minutes of April 29, 2015 Public Meeting

Held at the Offices of the Central Massachusetts Regional Planning Commission (CMRPC), 2 Washington Square, Union Station, Worcester

ATTENDANCE:

1. Aurelia Alphe, WalkBike Worcester
2. Ed Beauchemin, Westborough Bike and Ped Advisory Committee
3. Wendy Bergman, WalkBike Worcester
4. Mary Ellen Blunt, CMRPC Staff
5. Nick Burnham, CMRPC Staff
6. Dan Carpenter, Auburn Board of Selectmen
7. Jonathan Church, CMRPC Staff
8. Dan Daniska, CMRPC Staff
9. Maurice DePalo, Shrewsbury, CMMPO Northeast Subregion Representative
10. Arthur Frost, MassDOT Highway Division District #3 office
11. Yahaira Graxirena, CMRPC Staff
12. Phil Joinville, Auburn, CMRPC Transportation Planning Committee, designee on CMMPO to CMRPC Commission Chair Howard Drobner
13. Richard Kerver, Worcester
14. Kevin Krasnecky, CMRPC Staff
15. Sujatha Mohanakrishnan, CMRPC Staff
16. Dave Mohler, MassDOT Planning Division
17. Bryan Pounds, MassDOT Planning Division
18. Gerald Powers, WalkBike Worcester
19. Rob Raymond, CMRPC Staff
20. Rich Rydant, CMRPC Staff
21. Steve Tyler, Spencer, CMMPO Advisory Committee

Agenda Item #1 – Around the Room Introductions

The meeting began at 6:00 PM. As requested by Mary Ellen Blunt, those present introduced themselves.

Agenda Item #2 – Mobility 2040 – Long Range Transportation Plan

Plan Overview

Mary Ellen Blunt introduced Mobility 2040, the Long Range Transportation Plan (LRTP) for the Central Massachusetts Metropolitan Planning Organization (CMMPO). She reviewed the purpose of the plan that is re-developed every four years and was last updated in 2011/2012. She stated that public input helps develop and outline programs, projects, and strategies and determine how funding is spent across all transportation modes in the plan. Over the next twenty-five years, the CMMPO will receive $600 million in project funding that amounts to $48 per person, per year in the region.

Public Outreach Process – Review of Survey Results

Nick Burnham presented the Mobility 2040 survey results that had been distributed during the LRTP public outreach process. He said that the survey had been available at stakeholder group meetings, public information tables held throughout the region, various committee meetings, and was sent to every community in the region. He added that paper surveys were delivered to libraries in communities that had low online response rates. He said that 623 surveys had been completed in three formats; interactive, paper, and online. The interactive survey received 61 responses, the paper survey received 229 responses, and the online survey received 333 responses.

Mr. Burnham stated that the complete presentation of survey results were available on the Mobility 2040 webpage on the CMRPC website. He reviewed the results of each question and indicated which survey format the question originated from. He said that Worcester had the highest amount of responses with 154, and each community in the region had completed at least one survey. Among the three survey formats, a total of eight questions were asked; community of residence, community of employment, age group, modes of travel used and how often, the three methods of transportation considered most important in the future, top three issues to consider in the plan, the most difficult intersections/area encountered on a daily basis, and how would a respondent invest their transportation dollars.

Richard Kerver asked about the e-mail distribution lists that the survey was announced through. Mr. Burnham explained the various interested parties lists that CMRPC staff maintains and offered to speak with Mr. Kerver after the meeting.

Review of Recommended Projects/Initiatives/Studies, Recommended Allocation of Funding Priorities across Categories, Recommended Financial Scenarios for Regional Transportation Model

Sujatha Mohanakrishnan reviewed the Major Infrastructure (MI) projects and initiatives options that are under consideration for inclusion in Mobility 2040. She defined MI projects as projects that are over $10 million total project cost. She said that staff worked to create MI project options for the next 25 years, divided into five-year bands, and listed by transportation mode. Due to the requirement that the plan be fiscally constrained, she said that only one highway MI project could be programmed in each five-year band. She added that staff anticipates large-scale regional projects such as I-495/MassPike and I-495/Route 9 Interchange Improvements projects to be Statewide priorities. She reviewed the MI project options for highway, transit, bicycle and pedestrian, commuter rail, and freight rail.

Ms. Mohanakrishnan asked attendees to complete a survey regarding which funding scenario and MI roadway project option they would recommend for inclusion in the plan. She said that the

survey was made available on the CMRPC website and also had been translated into Spanish. Respondents were asked to choose one of two different funding scenarios;

Funding Option 1:
Infrastructure Maintenance: 60%
Congestion Relief: 12%
Safety Improvement: 10%
Bicycle Accommodations: 3%
Pedestrian Accommodations: 3%
Freight Improvements: 3%
Passenger Rail: 3%
Transit Support: 3%
Technology: 3%

Funding Option 2:
Infrastructure Maintenance: 70%
Congestion Relief: 9%
Safety Improvement: 7%
Bicycle and Pedestrian Accommodations: 2.5%
Freight Improvements: 2.5%
Passenger Rail: 3%
Transit Support: 3%
Technology: 3%

Respondents were asked to choose one of three different MI roadway project options;

Project Option 1:
2015-2020: Route 9, West Brookfield or no MI project
2021-2025: Routes 9/20, Northborough
2026-2030: Kelley Square Bridge Expansion, Worcester
2031-2035: Routes 146/20/MassPike Interchange, Millbury
2036-2040: Kelley Square Bypass, Worcester

Project Option 2:
2015-2020: Route 9, West Brookfield or no MI project
2021-2025: Route 20 Widening, Worcester
2026-2030: Routes 9/20, Northborough
2031-2035: Kelley Square Bridge Expansion, Worcester
2036-2040: Routes 146/20/MassPike Interchange, Millbury

Project Option 3:
2015-2020: Route 9, West Brookfield or no MI project
2021-2025: Route 20 Improvements, Charlton/Oxford
2026-2030: Route 20 Widening, Worcester
2031-2035: Routes 9/20, Northborough
2036-2040: Kelley Square Bridge Expansion, Worcester

Gerald Powers inquired about the project limits of the Kelley Square Bypass project and stated that the proposed project would not only alleviate traffic at Kelley Square, but would help with Washington Square as people could travel directly to Grafton Street from Winter Street.

Richard Kerver asked Ms. Mohanakrishnan to list the performance measures set forth in the plan. Ms. Mohanakrishnan and Ms. Blunt replied with reduce congestion and improve mobility for all modes, improve safety and security of the region, achieve state of good repair, increase transportation options and promote healthy modes, reduce greenhouse gas and promote

sustainable practices, equitable transportation for all populations, and improve economic vitality and freight movement.

Agenda Item #3 – Public Discussion of Recommendations and Feedback

Ms. Blunt opened the floor to meeting attendees to provide recommendations and feedback based on the information presented.

Gerald Powers commented that safety is a concern, specifically a high number of accidents in Worcester. He said that the attitude needs to change and people need to be aware of all roadway users. He referenced that there are multiple fatalities for pedestrians on Route 20 and that roadway widening may benefit automobiles, but not alternative modes.

Richard Kerver remarked that bicycle safety remains a large issue. He said that he uses an electric bicycle as his sole means of transportation and is also a mobility device. He said he uses sidewalks for his bicycle on roads that he feels unsafe. He stated that there is a need for more bicycle lanes and that MI projects should be bicycle friendly and reduces dependence on automobiles. He recommended that project funding should be solely utilized on making Central Massachusetts a bicycle friendly region. As a reference, Mr. Kerver distributed the news article '*End of the Car Age: How Cities are Outgrowing the Automobile*' from The Guardian (UK) to CMRPC staff members.

Mr. Kerver requested that there be significant text and an implementation plan in Mobility 2040 about how greenhouse gas reduction goals are being met. Ms. Blunt replied that each project has to be measured for greenhouse gas reduction and the Mobility 2040 plan would be measured for its effectiveness.

Mr. Kerver inquired about the release date for the draft plan. Ms. Blunt stated that the CMMPO would vote at the June meeting to release the draft Mobility 2040 document for a 30-day public review and comment period and vote to endorse the document at the July meeting.

Agenda Item #4 – Future Meetings

- CMMPO Advisory Committee Meeting – Wednesday, May 20th at 3:00 PM
- CMMPO Meeting: Discussion of Mobility 2040 – Wednesday, May 20th at 4:30 PM
- CMMPO Meeting: Release Mobility 2040 for Public Review – Wednesday, June 10th at 4:30 PM
- CMMPO Meeting: Endorse Mobility 2040 – Wednesday, July 15th at 4:30 PM

Agenda Item #4 – Adjournment

The meeting concluded at 7:03 PM.

495/MetroWest
Partnership
Leaders for Regional Prosperity

July 15, 2015

Mr. Steve Woelfel
MassDOT Representative to CMMPO
Central Massachusetts Regional Planning Commission
Union Station, Washington Square
Worcester, MA 01604

Re: *Mobility 2040*, the Central Massachusetts Metropolitan Planning Organization's draft Long Range Transportation Plan

Dear Mr. Woelfel:

On behalf of the 495/MetroWest Partnership, please accept the following as our official comments regarding the draft *Mobility 2040,* Central Massachusetts Metropolitan Planning Organization's (CMMPO) draft Long Range Transportation Plan (LRTP). Our comments will speak to both specific projects as well as the process leading up to the CMMPO vote on June 17, 2015.

The 495/MetroWest Partnership is a non-profit advocacy organization serving thirty-five communities, over half a million residents, and an employment base of over $21 billion per year. The Partnership seeks to address regional needs through public-private collaboration by working to enhance economic vitality, improve quality of life and sustain natural resources. The Partnership focuses on helping to alleviate regional constraints and limitations, and conducts numerous initiatives on transportation, workforce housing, brownfields, and water resources.

With our latest economic analysis, we know that the 495/MetroWest region has continued to grow thanks to a diverse economic base and a high quality of life. While this growth has resulted in opportunities and benefits, the transportation challenges remain. If ignored, these challenges threaten the quality of life and economic wellbeing of a region that has become an economic engine for the Commonwealth. Our regional transportation challenges affect the state's ability to remain economically competitive. These challenges include: increasing traffic congestion, an increase in vehicle miles traveled, highway capacity issues, gaps in public transit coverage, and aging transportation infrastructure. Our 2014 *495/MetroWest Top Ten Transportation Nightmares*, a publicly nominated list, speaks directly to the region's priorities, which span highway, transit, bike and pedestrian needs.

The Partnership greatly appreciates the efforts on behalf of the Central Massachusetts Regional Planning Commission and MassDOT District 3 in finding a solution to include a portion of the **I-495/Route 9 Improvement Project in FY 2021-2025** of the LRTP. Given the fact that the project was in risk of being excluded entirely from the LRTP, we commend CMRPC and District 3's creativity and rapid response to separate portions of the project in order to advance it. The I-495/Route 9 project has been a long term priority for the Partnership and the region, moving from number 10 to number 7 on our *Top Ten Transportation Nightmares* from 2004 to 2014. We are extremely grateful for the CMMPO's inclusion of at least a portion of this project given its regional importance and impact.

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Unfortunately, another important project in our region, **the I-90/I-495 Interchange Improvements Project** (#6 on our 2014 *Nightmare* List), was ultimately removed from the LRTP. It is our understanding that CMRPC was asked to remove this project from the LRTP due to a lack of toll revenue beyond 2017. We must admit that we were perplexed by this statement given the ongoing MassDOT investment of $200-300 Million in All Electronic Tolling. Further, the move to All Electronic Tolling only creates greater urgency for the much needed improvements at this Interchange. While the Partnership appreciates the commitment made by MassDOT to this project at the June 17th CMMPO meeting and the subsequent inclusion of the project in the final MassDOT FY 2016 CIP as one of "five projects of particular note", we nevertheless remain concerned about the Project's exclusion from the LRTP. We understand that LRTP's can be amended and are hopeful that any future amendments to the CMMPO LRTP include prioritizing and reincorporating the I-90/I-495 Interchange Improvements Project.

While we respect and understand the decision to not include another project in the Partnership's region, namely **Route 9/Route 20 in Northborough**, its exclusion speaks directly to the challenge faced by CMRPC when drafting this year's LRTP. As does the removal of the above mentioned I-90/I-495 Interchange Improvements project, both of which occurred with less than one week's notice before the June 10th CMMPO meeting, when a vote on the LRTP was on the agenda. Last minute changes of this magnitude are surprising and disappointing, feeding into the frustration many communities and transportation advocates experience with the MPO process. It was apparent that these changes were unexpected by the MPO members themselves and we appreciated their consideration when tabling the vote for another week. However, neither the MPO members nor project proponents should be scrambling to formulate the best possible LRTP on such short notice, especially when considering the months of dedicated work done by CMRPC staff.

We would like to think this LRTP process was unique relative to excluding the Major Infrastructure Project category as well as statewide funding resources, like Bridge Maintenance, however, the uncertainty of future federal highway and transportation funding does not leave us feeling optimistic. We therefore urge you and your colleagues at MassDOT to identify innovation funding mechanisms to address major infrastructure projects like I-90/I-495, particularly when such projects have a regional impact and cross MPO boundaries. As we similarly noted in our TIP commentary, the Partnership is concerned about future funding years if the CMMPO continues to be limited to only regional funding targets for all projects, thereby eliminating major infrastructure projects, severely limiting regional level projects and ultimately pitting the rural and suburban projects against urban ones.

The Partnership recognizes that there is simply not enough revenue to cover the many worthy projects in the queue, which is why we have consistently advocated for greater resources for MassDOT.

We appreciate your consideration of our commentary on the LRTP and would welcome any questions, which should be directed to Jessica Strunkin at (774)760-0495 x. 101 or Jessica@495partnership.org . Thank you for your efforts in planning the use of scant resources for many worthy projects, as well as for your time and consideration.

Sincerely,

Paul F. Matthews
Executive Director

Jessica L. Strunkin
Deputy Director

TOWN OF CHARLTON
Fire Department

PO Box 114, Charlton City, MA 01508
Phone 508-248-2299 Fax 508-248-6190
Headquarters Located at 10 Power Station Road

June 3, 2015

Central Massachusetts Metropolitan
Planning Organization
2 Washington Square - Union Station
Worcester, MA 01604

Re: Charlton -Oxford Route 20 (602659) Central Massachusetts Metropolitan Planning Organization (CMMPO)

To Whom It May Concern;

We all know that projects of this nature are extremely important to the Commonwealth, Counties, Cities and Towns but non-more important to the Town of Charlton. Route 20 is considered a major infrastructure to the growth and development of not just Massachusetts but New England as well. The primary reason is due to the fact that the Massachusetts Turnpike runs 10 miles through the Town. In one year alone 10 million vehicles pass through the Town between Exit 9 and 10. That is over 27,000 vehicles a day and during peak times there are 5,000 vehicles on that roadway per hour.

What does that have to do with Route 20, when we have a major traffic due to accidents, trailer truck rollovers, hazardous materials spills and holiday traffic, the traveling public wants to get where they are going and still quickly.

This has been recognized by the United States Department of Transportation as an initiative to better manage traffic at emergency scenes and the like. The Traffic Incident Management program was developed and is being taught around the country for the major reasons of traffic congestion and quick safe clearance to restore the roadways to full capacity.

With that being said, when situations happen on the Turnpike it affects the Town of Charlton tremendously; many "apps' put people on back roads and Route 20 which is not designed for that volume of traffic. There are some areas of Route 20 that are single lanes both East and Westbound with lights slowing traffic even more.

Last year, 2 days before Thanksgiving, we had an incident on the Pike that caused a 47 mile backup into Boston. That incident took 3 hours to manage and clear but traffic was not restored

until 10 hours after the incident. Many of the residents in the community were affected, including emergency services that needed to get through the congestion, while attempting to respond to the citizens of the Town of Charlton. Some people could not get to the schools to pick up their children on time, people were late for appointments, and even one person I know missed their flight out of Bradley Airport due to the traffic. They never made it to their families Thanksgiving dinner in Denver.

If it is at all possible to reconsider this project it would be greatly appreciated.

If you have any questions or would like to speak to me about this situation, please call my office at your convenience.

Sincerely,

Charles E. Cloutier Jr.
Chief of Department

clf
conservation law foundation

For a thriving New England

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July 20, 2015

Richard Rydant
Transportation Project Manager
Central Massachusetts Regional Planning Commission
2 Washington Square
Worcester, MA 01604-4016

Re: CLF Comments on *Mobility 2040* and FY2016-FY2019 TIP

Dear Mr. Rydant:

Conservation Law Foundation (CLF) is pleased to provide the following comments on *Mobility2040*, the Long Range Transportation Plan (LRTP), and draft Transportation Improvement Program for fiscal years 2016-2019 (TIP). CLF appreciates the opportunity to comment and has focused on two areas: 1) support for comments submitted by Walk Bike Worcester, and 2) ozone conformity analysis.

Introduction

CLF is New England's leading regional environmental advocacy organization. Since 1966, CLF has worked to protect New England's people, natural resources and communities. CLF is a nonprofit, member-supported regional environmental organization working to conserve natural resources, protect public health, and promote thriving communities for all in the New England region. CLF has long advocated for a better transportation system in New England.

Walk Bike Worcester Comments

CLF adopts in full the comments submitted by Walk Bike Worcester on July 20, 2015, by reference. In particular, CLF agrees that pedestrian and bicycle modes should have greater emphasis in the LRTP. While the 3% allocation for each mode is an improvement, it is too modest a goal. For instance, the Southeastern Massachusetts Metropolitan Planning Organization plans to set a 10% goal for "pure" bicycle infrastructure (meaning projects exclusively focused on enhancing our bike network) in its LRTP. We encourage the CMMPO to allocate a greater percentage to both pedestrian and bicycle modes. Specifically, CLF proposes that the allocation be increased to 5% for pedestrian and 5% for bicycle modes, for a total "pure" bike/pedestrian allocation of 10%.

CLF also agrees with Walk Bike Worcester that, with regard to performance measures, the safety performance measure (particularly Goal 2, Objective 1) should be separated into vehicle, bicycle, and pedestrian measures. Also, the Complete Streets performance measure (Goal 4, Objective 3) should be more ambitious than 10% over 10 years. Finally, the equitable

transportation performance measures (Goal 6, Objective 1) would be improved by specifying measurement for the "increase multimodal access…in 2 EJ neighborhoods in 5 years" provision, and employing innovative outreach methods developed by other MPOs around the country.

Conformity Analysis

CLF recently learned with great disappointment that this year the MPOs in Massachusetts again do not intend to conduct any conformity analysis for ozone as is required by the Clean Air Act (CAA), despite a recent United States Court of Appeals for the District of Columbia Circuit decision that affirms the requirement. See *NRDC v. EPA*, No. 12-1321 (D.C. Cir.). The transportation conformity requirement, which can be found at 42 U.S.C. s. 7506(c), integrates the CAA with the transportation planning process by conditioning federal approval and funding of transportation activities, such as the LRTP and the TIP, on their demonstrated compliance with applicable state implementation plans (SIPs). The statute requires MPOs to estimate emissions from covered projects to assure that new emissions will not thwart the attainment of federal national ambient air quality standards (NAAQS).

The drafters of the 1990 Clean Air Act Amendments recognized and stressed the importance of transportation conformity planning:

> "The lesson of the past is clear: If we continue to fail to achieve effective integration between air quality goals and the transportation systems, American cities fail to attain clear air. If carefully administered by EPA and DOT these amendments offer the potential for achieving the healthy air quality that has eluded American cities for 20 years."

CLF understands that the CMMPO is not continuing to abandon this crucial diagnostic tool on its own accord but rather at the advice of the United States Environmental Protection Agency (EPA). The EPA's counsel, however, is based on a faulty legal analysis. Considering the importance of conformity planning to the region's air quality, CLF respectfully requests that the CMMPO return to its tried-and-true practice of conducting the conformity analysis for ozone for the TIP and LRTP.

Normally, when a region achieves attainment-level monitoring data for a NAAQS, as the Boston-Lawrence-Worcester region did on May 29, 2012, see 77 FR 31496, the CAA requires it to undergo a redesignation and maintenance process, which lasts 20 or more years. During the redesignation and maintenance process, MPOs are required to continue to perform transportation conformity analyses. See 40 C.F.R. § 93.102(b). The purpose of a maintenance plan is to ensure that the region remains in attainment.

The CAA requires the EPA to set and periodically revise air quality standards for pollutants like ozone to protect public health and welfare. The EPA promulgated ozone NAAQS

in 1979 and 1997 and strengthened the ozone standard again in 2008, leaving the previous standard in effect. It took the EPA until May 2012 to promulgate designations (i.e., nonattainment or attainment) for the 2008 ozone standard for areas throughout the country. At the time of the initial designations for the 2008 ozone NAAQS, which occurred in 2012, the Boston-Lawrence-Worcester region in which the CMMPO resides had monitoring data that met the prescribed monitoring level over a three-year average and was determined in attainment for the first time. Simultaneously with the designations rule, EPA revoked the 1997 NAAQS for transportation conformity purposes only, effective July 20, 2013. As a result, the Boston-Lawrence-Worcester region became one of more than 70 "orphan areas" in the country, where no conformity analysis is required anymore, based on the pure happenstance that the region met the prescribed monitoring level at the same time initial designations went into effect. Without that revocation, all the MPOs in the Boston-Lawrence-Worcester region would have had to continue conformity analyses to ensure that proposed transportation projects square with plans for maintaining safe ozone levels for at least 20 years. For that reason, as mentioned above, the United States Court of Appeals for the District of Columbia Circuit in December of 2014 decided that this revocation of the 1997 NAAQS for transportation conformity purposes alone violates the CAA and vacated the portion of the EPA's rule which eliminated this requirement.

Pursuant to this ruling, the CMMPO would be required to conduct conformity analyses for the TIP and LRTP. Since then, however, the EPA has issued a new rule revoking the entire 1997 NAAQS, which presumably is the agency's basis for advising the MassDOT and the CMMPO that no conformity analysis is required. Not surprisingly, this revocation is being challenged in court again. See *Sierra Club v. EPA*, No. 15-1123, (D.C. Cir., pending). Because the EPA cannot lawfully sweep aside the CAA's statutory conformity analysis requirement without violating the anti-backsliding provisions of the CAA, which are designed to ensure that air quality does get worse after a NAAQS is revoked, it can reasonably be expected that the elimination of the conformity analysis requirement for maintenance areas will again not be permitted.

Since the CMMPO intends to already conduct a GHG analysis for the TIP and LRTP, adding the conformity analysis for ozone, which is similar, would not be an arduous additional step. This would allow the CMMPO to assure its members and the public that the proposed plans remain consistent with the goal of protecting the region from the serious public health threats associated with ozone. CLF therefore recommends and respectfully requests that despite the EPA's position, which is not sustained in the law, the CMMPO conduct a conformity analysis for the TIP and LRTP this year rather than to wait until a court orders it yet again.

Thank you for your consideration of these comments. If you have any questions, I can be reached by phone at (617) 850-1763 or by email at jrushlow@clf.org.

clf
conservation law foundation

Sincerely,

Jennifer Rushlow
Staff Attorney

cc Mary Ellen Blunt (CMRPC)

FHWA – Massachusetts Division
CMMPO 2040 RTP Comments
July 16, 2015

- The financial plan for highway and transit should demonstrate how the MTP can be implemented. The plan should show how revenue available aligns with programmed commitments. If there is any outstanding commitments or revenues available the plan should clearly illustrative this information. Edits have been made to better show financial constraint.

- Operations and Maintenance commitments should be further defined in the financial chapter. Do these commitments align with the funding goals (Option 1)? How are these categories defined specifically (ie Pedestrian Accommodations)? Are these activities distinguished separately from operational improvements as defined 450.322 (10)(i)? Do the revenues provided for statewide improvements take in the consideration of operational and maintenance commitments? Edits have been made to show how goals tie to funding categories, and how system maintenance will be achieved.

- Are the Bike/Ped and Freight Rail Projects to be included as part of the financially constrained RTP? The financial plan must identity all sources of funding and strategies to ensure their availability (450.322(f)(10). Please provide additional detail for projects shown as private funding. Additional detail has been provided.

- The Environmental Profile section of Chapter 3 describes the environmental mitigation activities using MassGIS environmental consultation maps as an appendix. This appendix should be made available. In addition, the RTP should describe its consultation efforts with environmental and state resource agencies during the development of the plan. The RTP should include a description how they coordinated with these agencies. The extensive Environmental Consultation effort undertaken will be summarized in the Environmental Profile section.

- The 2040 RTP does a good job condensing topic areas and integrating performance measures throughout the document. This is primarily displayed in the Transportation Linkages and Transportation Modes chapters. While the MPO is applauded for their attempts to provide a more readable document, a table of contents would be helpful at the beginning the RTP. Table of Contents was prepared but not included as it was expected to change. Future year drafts will include this.

Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Stephanie Pollack, MassDOT Secretary & CEO

massDOT
Massachusetts Department of Transportation

July 16, 2015

Lawrence Adams, Executive Director
Central Massachusetts Regional Planning Commission
2 Washington Square, 2nd Floor
Worcester, MA 01604

Dear Mr. Adams:

The Massachusetts Department of Transportation (MassDOT) Office of Transportation Planning (OTP) has reviewed the draft 2016 Regional Transportation Plan (RTP) released by the Central Massachusetts Metropolitan Planning Organization (MPO) on June 17, 2015. MassDOT commends staff efforts to provide a thorough document and for addressing the concerns of the public and local officials regarding long term transportation infrastructure investments.

The following MassDOT comments include both general guidance and specific comments on the MPO's 3C planning process with regard to the content of this document as released for public review.

- Please include a Cover page with the final document. Will provide.
- Please include a signatory's page with the final document. Will provide.
- Please include a table of contents and list of figures with the final document. Done. Was not included in draft as it was expected to change based on comments.
- General - Strike out all references to "alternative modes" throughout the document and replace with multi-modal, healthy transportation options, or transit services, as applicable. Will comply.
- General – The use of figures and graphics is encouraged in lieu of lengthy narratives that do not provide support for an established vision and/or relevant transportation linkages. Will review for opportunities to supplement existing graphics.
- General – Efforts should be made by staff to ensure that the document is as concise as possible and to provide a vision for long range transportation planning in the region. Reinforcing data (e.g. slower Vehicle Miles Traveled (VMT) growth and projected trends to support this vision should be provided throughout the document. Current document is about half of previous document, and staff has identified additional opportunities to trim as subsequent comments were

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reviewed. The vision statement was inadvertently omitted and will include at beginning. Will include more ties between data/trends and vision.

- Executive Summary
    - Future Growth – Regarding the reference to understanding the significance of where growth will happen, it is also important to include supporting documentation of why growth is slowing, including relative demography such as an aging population. Growth is only slowing marginally in Central Mass. Since 1950, growth has averaged approximately 6-7% per decade and is now projected to increase at approximately 5% for the each of the next three decades, in line with overall Massachusetts growth that is expected to slow compared to previous decades.
    - Population – Regarding Medium growth communities expecting to grow at the "regional average": Specify what the regional average of growth is. Will add.
    - Fiscally Constrained Alternatives – Under Policies, Table 1 Bicycle and Pedestrian Initiatives, eliminate the column with $0.00 project cost. Will re-title to reflect that study cost will be included in the Unified Planning Work Program.
    - Figure II Major Infrastructure Projects – Should reference that these projects are from Table 2 and label them as such. Will edit as suggested.
- Introduction (Chapter I)
    - General – Both the preceding Executive Summary and Introduction section should provide a succinct and clear vision for the future of transportation and transportation planning in Central Massachusetts, including projected trends that are influencing decision making and investment decisions. These sections contain useful information, but are failing to link the data provided with long range transportation planning. Will include vision, tie to trends, and make connection to transportation planning.
    - Population and Economic Projections
        - Background - Regarding the discussion on the transportation infrastructure facilitating the trend of people living in the area and commuting to Eastern Massachusetts, what are the demographics associated with this? This section should elaborate on trends such

as younger individuals choosing not to drive as a means for commuting. At present, staff has not determined the demographics associated with the trend of commuting to Eastern Mass. We simply know that both auto travel along I-90 and commuter rail travel are continuing to increase. While it is true that approximately 15% of teenagers nationally are choosing to delay getting licenses, we do not have any information that supports that translating to less auto travel and more transit travel in Central Mass. In fact, while the WRTA has seen a significant ridership increase over the past 7-8 years, it has still been difficult to attract college students even with 9 colleges within City limits.

- The abundance of affordable housing in comparison to housing prices in Eastern Mass. is still the trend that is fueling living here and commuting to the east.

- Future Growth – The opening paragraph is contradictory to the statistics being provided. While it may be true that overall growth has occurred in the last 30 years, the data shows that employment has dropped 8% from 2000 to 2010. Revise and clarify, as appropriate. Will edit section to clarify that:

    - employment decreased about 3% (data was updated by MassDOT since written) during the decade of 2000-2010, and it is expected to recover that loss by 2020, and then growth modestly

    - population has maintained a robust growth of 7% per decade since the 1950s, and is expected to continue at a 5-6% rate to 2040

- Page I-6 – Remove the phrase “With the Mobility2040 plan deadline fast approaching…” Will comply.

- Future Growth and Key Findings - Demography is not adequately tying trends that are influencing transportation planning, decision making and future investments. Please ensure that linkages are being made between projected future trends and the potential transportation infrastructure impacts. Section will be edited to better tie demographic trends influencing transportation planning.

- Performance Management (Chapter II)

- Please include a more comprehensive introduction to why these specific performance management measures were chosen and the process associated with their development. Will edit accordingly.
- Regarding the reference to the requirements of goals and objectives based on federal legislation: Goals and objectives have historically been a requirement of long range plans prior to MAP-21. Rather than referencing requirements, there should be an elaboration on why these performance management tools are useful and reinforce the vision for the region. Will comply.
- The presentation of the goals and objectives could be better displayed in a different format, such as a table or using graphics and figures to aid comprehension. Also, black on grey as a header is a poor choice of color association. Please revise. Will attempt to improve formatting.
- Under Goal 5, Objective 2 regarding "all projects must be included as part of all TIP environmental analysis…" – This is not necessarily a measurable objective; environmental review is a requirement for all federally funded projects. Language will be edited to reflect the pre-Environmental screening done as part of early environmental consultation to determine opportunities for avoidance, minimization, and mitigation of impacts.

- Transportation Linkages (Chapter III)
  - General – Much of this chapter contains information that fails to link the data provided with long range transportation planning and lacks projected future trends that are useful for the decision making process (e.g. Water, Sewer, Wastewater, Broadband, Housing, etc.) Please revise as appropriate to provide adequate transportation linkages in all subsections of this Chapter. These focus areas generally affect overall growth and economic development activity and thus provide insight into where transportation infrastructure is likely to be needed. It also affects project level screening. Staff will make better linkage to transportation and/or include in technical appendix, as appropriate.
  - Land Use - The discussion on land use does not adequately tie back to the impacts on transportation – congestion, expansion/maintenance, impermeable surfaces, GHG emissions, mode shift, difficulties associated with providing transit service or bike/pedestrian infrastructure, lack of access to jobs/services for youth/elderly, and low-income/minorities. Will make clearer connection between land use and transportation needs.

- Water, Sewer, Other Infrastructure – This section appears to be distinctly out of sync with a long range transportation planning document. Please revise the narrative to provide specific transportation linkages or eliminate the section. Will move section to technical appendix as noted above.

- Broadband – If included, this section should be significantly revised and condensed to focus on trends associated with work-at-home options and the influence this would have on reducing Vehicle Miles Traveled (VMT). Will omit section.

- Housing – This section appears to market the region as an attractive alternative to living in Boston or MetroWest markets; however it fails to mention the demographic trends associated with the statistics provided (e.g. youths/millennials choosing to live alone and influencing the market) and the relevant transportation linkages. Will edit language to reflect that despite regional staff efforts to encourage more compact development through activities such as identification of Priority Development Areas, much of region will remain very low density and subject to continued sprawl into the near future due to lack of community willingness to constrain such sprawl. As a contrast, Worcester is expected to increase population and employment density in CBD, but is still expected to remain moderate density for the overall City and not high density like Boston and surrounding areas.

- Economic Development

    - The first sentence references “As is demonstrated by the activities occurring within each subregion…” please clarify. Will edit out this reference.

    - Regarding the 8% decline in employment, please provide specific data that may have contributed to this decline (e.g. aging population.) Data will be edited to reflect 3% decline as noted earlier. Decline was related to recession, and not to aging population or other known trends.

    - Under the first bullet, change 2035 to 2040. Will comply.

    - Under the second bullet, revise “current” to recent. Revise any reference to “current recession” throughout the document. Will comply.

- Under the third bullet regarding wages and employment to the four major industries in the region: provide relative transportation linkages. Will provide linkage.

- Environmental Profile

  - General – Suggest merging sub-sections in the Environmental Profile section into the succeeding well-written sections on Sustainability, Healthy Transportation and Climate Change, where appropriate, to provide a concise narrative. Language will be edited to reflect the pre-Environmental screening done as part of early environmental consultation to determine opportunities for avoidance, minimization, and mitigation of impacts. Remaining inventory items will be placed in the Technical Appendix.

  - Avoid deferring to regulatory agencies in this section, and rather focus on the efforts conducted by CMMPO. Will comply, but it helps to note that these efforts have the weight of being part of national and state efforts, rather than simply regional.

  - Revise the second sentence from “for more and better transportation” to “improved transportation infrastructure.” Will comply.

  - Include land use and transportation linkages in this section. How do development patterns impact the environment? Will review and edit.

  - Under Water Resources – Relative to “Transportation can have a great impact in overall watershed water quality” identify mitigation measures relative to transportation and ensure that this section supports the vision that needs to be included in the document. Will review and edit.

  - Geology, soils and topography; Forests and Vegetation; Fisheries and Wildlife; Cultural, Archaeological and Historic Features; Areas of Environmental Concern subsections – Lacks relevance to the purpose of a long range transportation plan. Please provide adequate linkages to transportation throughout these sections. Will review and edit.

  - Brownfields - This section seems to under report the opportunities for both environmental stewardship and economic development. Is the region capitalizing on economic development incentives to use

these parcels of land? Also, since there is transportation infrastructure serving these parcels, and Greenfield development would require new infrastructure, the links to transportation should be discussed. Suggest revising Figure III-6 to a map of Brownfields in the CMMPO region. Will review and edit. Will make linkage to transportation-related brownfield efforts such as the WRTA Maintenance & Operations facility.

- Sustainable Transportation – Page III-33 Complete Streets include reference to the Healthy Transportation Policy Directive. Will add reference.
- Climate Change
  - Figure III-7 is illegible. Will replace figure.
  - Under page III-39, spell out WRTA. Will comply.
- Transportation Security - This section could be expanded upon. Are there freight hazard issues – ethanol etc.? Does climate change threaten transportation security? Will include text to tie climate change and other hazard issues.
- Title VI, Linguistic Isolation & Environmental Justice (EJ) Population
  - Include the map under the EJ section in the summary in this section. Will comply.
- Access to Essential Services
  - What are the existing conditions regarding access to essential services? How are the goals/objectives properly outlined without sufficient analysis of the existing conditions? Will include preliminary analysis performed in conjunction with recently completed WRTA Comprehensive Service Analysis. Additional detailed analysis is part of FY16 Unified Planning Work Program.
- Access Management
  - The section should not follow the “Access to Essential Services” section, as it appears contradictory. Provide relevant linkages to land use within the narrative. Will move closer to land use discussion.

- Transportation Modes (Chapter IV)

- General – The use of graphics and figures in this section to aid the narratives would be helpful. Have identified additional opportunities for graphics and figures that will be included.
- Introduction – Consider adding a road network map with the narrative. Will add multimodal map that includes road network.
- Pedestrian
    - This section is lacking relevant reference to youths/millennials and correlating trends associated with automobile use vs. walking to work, school, or social events. Trends are anecdotal at this point, but will include efforts to create opportunities for additional walking in areas that seem to warrant it, such as City and town centers/commercial districts, and near schools.
    - Paragraphs two and three regarding the Healthy Transportation Compact and GreenDOT appear in both the pedestrian and bicycle subsections. Consider using this narrative in the introduction section of this chapter. Will comply.
    - Discuss sidewalk maintenance, especially in the winter season, and the impacts to livability. Will add discussion.
    - Discuss relevant connections to transit networks. Will add discussion.
    - Needs Assessment – Along with further analysis and stakeholder outreach, ensure that the narrative also includes extensive public outreach for the Regional Bicycle and Pedestrian Plan update. Will comply.
    - Next Steps – Include the potential for funding projects that address gaps in the sidewalk network with Congestion Mitigation and Air Quality Improvement Program (CMAQ) or Transportation Alternatives Program (TAP) funding. Will comply.
- Bicycle
    - In the first sentence, ensure that transportation officials are not referenced alone in regards to the recognition that bicycling is increasingly becoming a preferred mode of transportation. Will comply.

- Next Steps - Include the potential for funding a bike sharing program with Congestion Mitigation and Air Quality Improvement Program (CMAQ) or Transportation Alternatives Program (TAP) funding. Will comply.
- Figure IV-1 Central Worcester HSIP Clusters – The graphic is illegible. Will change out graphic.

o Public Transit and Passenger Rail

- Remove the contractions of “don’t” and “can’t” in the introductory paragraph. Will comply.
- Regarding the reference to trends in recent years “reversing… first improved commuter rail service, and commuters returning to local public transit.” What does this trend imply? Please provide specific data to support the trend such as younger individuals choosing not to drive and an aging population as contributing factors. Will edit. Trends are aging population, rising gas prices, and a growing interest in being healthy and using sustainable transportation modes. Despite efforts by the WRTA to work with colleges and schools, no data yet to support younger individuals turning more to transit in this region.

o Fixed Route Congestion/On-Time Performance

- Under Performance Management, referencing “two of which are congestion related” – only one goal is listed. Will correct.
- Include discussion of the Highway Division’s role in potentially assisting communities in project development for improved transit service. Will add discussion.
- Under Needs – Mentioning “building additional lanes to increase capacity” at intersections should be used with caution. There are instances in which simply lengthening an existing designated turn lane can achieve the desired traffic flow without adding capacity, or the installation of a modern roundabout, as listed in the narrative. This was included in toolkit of potential long-term solutions, and will be edited to add “lengthening existing designated turn lanes”.

o Fixed Route Safety and Security

- Define what a “preventable accident” is. Will define.

        - Include any relationship to bus stop waiting areas and Complete Streets that could be discussed. Will add.

- Fixed Route Access to Essential Services
    - Reference the Coordinated Public Transit-Human Services Transportation Plan (CPT-HST) where applicable. Will add reference to CPT-HST and Central MA Regional Coordinating Council ongoing efforts.

- Auto Travel
    - Cite specific VMT projections/growth rates. Will add.
    - Figure IV-14 – Label “ADT” in the figure. Will edit.
    - Figure IV-15 and 16 – Suggest presenting this information as speed traveled below the speed limit. Staff can’t edit the graph, as it is a product of the “travel time” software, but will direct reader to focus on areas where speeds are very low as indicators of local congestion.
    - Figure IV-18 Is illegible. Will replace figure.
    - Provide any information regarding how the Highway Safety Improvement Program (HSIP) has improved the safety profile in the region. Will add discussion.

- Pavement and State of Good Repair
    - Revise “state Department” to MassDOT. Will revise.
    - Regarding the Overall Condition Index (OCI), elaborate on how the scores were derived. Will explain how OCI is derived.
    - Table IV-7 – The cost/square yard of rigid pavement should be considerately greater than flexible pavement. Is this chart a reflection of only flexible pavement or is rigid pavement also considered in the unit costs? This is flexible pavement only, as it is the primary type used in our state.
    - Figure IV-20 – Should be shown as percentages in lieu of number of miles. Correct the spelling of the word “excellent”. Will edit graph.

        - Figure IV-24 – Label “In Millions” on the y-axis of the chart. Will comply.
        - Page IV-77 - Regional Priorities states “the following list…” but there is no list presented. Will remove paragraph.
    - ITS - Consider automobile parking ITS in this section and the implications of reducing congestion and air pollution. Applicability of ITS for parking in this region will be included in future planning efforts. At present, parking is generally plentiful and inexpensive in this region.
    - Freight - This section should be condensed substantially, with attention to addressing redundancies throughout. The length of the section compared to other sections seems to indicate that freight holds more importance than other issues. Is this the case? Freight is significant in this region, but section will be edited to focus on current planning highlights, with remaining material moved to the technical appendix.
    - Airports – Condense this section to the extent possible. Will further condense.

- Summary of Needs and Analysis (Chapter V)
    - Figure V-1 –What are the references in the legend to (“all four + freight, etc.)? Map needs more clarification, and cross reference to Table V-1 if applicable. Will clarify.
    - Figure V-2 – Map is lacking links back to the narrative and should also be cross-referenced with Table V-1. Include ranks column. Will edit.
    - Table V-2, V-3 and V-8 – Define “EPDO.” Will define.
    - Under Prioritization, page V-12 define “AVL.” Will define.
    - The narrative leading into the final recommendation of projects should be condensed to the extent possible, and the major infrastructure projects table should be highlighted in a manner that the reader has better comprehension of the investments. This chapter includes multiple tables of projects throughout the summary and will be confusing to readers as to what projects are being recommended for future programming. Will edit to clarify final recommendations.

- Financial Plan (Chapter VI)

- Figure VI-1 Funding Options – The image is difficult to read. Suggest only displaying the chosen option as a graphic on one page for legibility. Retain both options that were presented in the preceding narrative. Will comply.

Please contact me at (857) 368-8865 or Bryan Pounds at (857) 368-8860 if you have any questions.

Sincerely,

David J. Mohler
Executive Director
Office of Transportation Planning

Cc: Pamela Stephenson, Division Administrator, Federal Highway Administration
Mary Beth Mello, Regional Administrator, Federal Transit Administration
Rich Masse, Acting Highway Director, District 2
Jonathan Gulliver, Highway Director, District 3
Steve Woelfel, Director of Strategic Planning
Trey Wadsworth, Manager of MPO Activities
Bryan Pounds, MPO Liaison
Tom Schiavone, Rail and Transit Division

JAMES P. McGOVERN
2ND DISTRICT, MASSACHUSETTS

COMMITTEE ON RULES

COMMITTEE ON AGRICULTURE

SENIOR DEMOCRATIC WHIP

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June 17, 2015

Secretary Stephanie Pollack
Massachusetts Department of Transportation
Ten Park Plaza
Boston, MA

Re: Removal of I-90/I-495 and I-495/Route 9 Interchange Projects from Central MA MPO Long Range Transportation Plan

Dear Secretary Pollack:

It has been brought to my attention that the Central Massachusetts Metropolitan Planning Organization (CMMPO) has been directed by Boston MassDOT, specifically the Office of Transportation Planning, to remove the I-90/I-495 and I-495/Route 9 interchange projects from their Long Range Transportation Plan (RTP) *Mobility 2040*. Preliminarily, let me say that I am concerned about the lack of sufficient notice to stakeholders prior to removal of these projects, only a week in advance of the MPO's vote on the final slate of projects.

In addition, you may not be aware that in 2009 I secured a $285,000.00 federal earmark for the planning, design and engineering study for the I-90-I-495 interchange. That study has been ongoing since shortly after I secured the earmark. In an effort to assure that this federal earmark was fully utilized, a member of my staff has served on the Interchange Study Advisory Committee since 2011. This project has been moving along well with a great deal of input and effort on the part of all stakeholders. Most recently, on March 2, 2105, the Environmental Notification Form for the project was filed, and a Massachusetts Environmental Policy Act Scoping Session was held on March 19, 2015.

Given this fairly significant federal investment in this project, I am writing to express my very strong opposition to the removal of this project from the CMMPO RTP.

I have been informed that the I-90/I-495 interchange project is no longer included in the RTP because it was to be funded using toll revenues that may no longer be available. Given that MassDOT is in the midst of investing $100 million in All Electronic Tolling (AET) on the Turnpike, I would request that the project be retained in the Long Range Plan until there is more clarity around the availability of future toll revenues.

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The redesign of this interchange has been a regional transportation priority for many years. For these reasons as well as the economic impacts due to traffic projections for one of the Commonwealth's busiest interchanges, I am very concerned by the Project's exclusion from the RTP.

In addition to the I-90/I-495 Project, I am also concerned about the removal the I-495/Rt. 9 Interchange Project. The decision to remove projects like this one, which require statewide funding, is a departure from past practice and may have significant consequences for an MPO like Central Massachusetts whose budget is already limited relative to the need. I fear that this new policy will make it more difficult to address larger scale regional projects like the I-495/Rt. 9 interchange that are essential to the long-term interests of the area.

I also understand that part of the reasoning for removing projects like I-495/Rt. 9 and I-495/I-90 from the RTP is due to the fact that MassDOT now intends to assess projects using statewide funding through the Project Selection Advisory Council (PSAC), a process which is not yet finalized.

However, MassDOT's Capital Investment Plan for FY 2016 indicates that MassDOT "will be pursuing design and engineering for the next generation of major projects, whether or not a plan is currently in place for financing those projects." Interestingly, the projects that are being characterized as "the next generation of major projects", and therefore exempt from PSAC review, are all Boston area projects.

It is my understanding that at least three Boston area projects (Allston at I-90, South Station and South Coast Rail) will proceed to design and engineering without review or a financing plan, while projects here in Central Massachusetts, which have already gone through significant design and engineering, will be removed. As you can imagine, I find this disparate treatment extremely problematic.

In closing, I would direct you to MassDOT's Capital Investment Plan for FY 2016, which indicates that "we must expect and demand of our investments that they provide returns, not only in mobility but also in economic prosperity, environmental stewardship, and improved social access and equality." I hope that this philosophy also applies to the significant federal investment that has already been made in the I-90/I-495 and I-495/Rt. 9 Interchange Projects.

I appreciate your consideration of my request to reconsider the prioritization of the I-90/I-495 and I-495/Rt. 9 Interchange Projects on the CMMPO RTP and look forward to your response. I also look forward to partnering with you as we work to address infrastructure priorities like these that directly affect the Central Massachusetts region and its economic future.

Sincerely,

James P. McGovern
Member of Congress

CC:
David Mohler, Executive Director, MassDOT Office of Transportation Planning
Thomas Tinlin, MassDOT Acting Highway Administrator
Jonathan Gulliver, District 3 Highway Director

JAMES P. McGOVERN
2ND DISTRICT, MASSACHUSETTS

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June 9, 2015

CMMPO Chair David Mohler
c/o Mary Ellen Blunt
CMRPC
2 Washington Square
Union Station, 2nd Floor
Worcester, MA 01604

Re: Town of Oxford and Charlton's Route 20 Reconstruction Project

Dear Mr. Mohler:

I am writing to express my strong support for the re-inclusion the of Oxford/Charlton Route 20 Reconstruction project as one of the Major Infrastructure Projects under the Mobility 2040 Plan.

The Chief of Police for the Town of Oxford, Michael Hassett, has recently contacted my office regarding the current safety concerns associated with this roadway. According to Chief Hassett, since 2005 there have been close to 400 accidents on this roadway; many of these accidents resulting in serious bodily injuries. Chief Hassett believes the current roadway design is the main cause for many of these accidents.

I am told that the citizens who reside on this street, or an adjoining street, have a difficult time entering on to Route 20 and have to seek alternate routes. This has been a cause of traffic congestion in other areas of the town. One area of particular concern is the Oxbow Road intersection. Attempting to enter onto Route 20 from this street is often very difficult and dangerous. An additional safety concern raised by Chief Hassett is the fact that Route 20 is an undivided roadway which increases the chances of lane crossover accidents.

While I understand there are many other projects that need funding, I respectfully ask that you give this project your full and fair re-consideration. If you have any questions, please contact Kathleen Polanowicz in Worcester office at 508-831-7356 or at Kathleen.polanowicz@mail.house.gov.

Sincerely,

James P. McGovern
Member of Congress

THIS STATIONERY PRINTED ON PAPER MADE OF RECYCLED FIBERS

Oxford Police Department
503 Main Street
Oxford, MA 01540

(508)987-0156 voice (508)987-6020 fax

Michael C. Hassett
Chief of Police

Lieutenant Anthony Saad

Sgt. Robert Green
Sgt. W. Marcelonis
Sgt. Jeromy Grniet

Dear CMMPO & CMPRC,

This memo is in response to a vote taken by CMMPO on May 20th, 2015. The vote does not include the Oxford/Charlton Reconstruction project as one of the Major Infrastructure Projects under the Mobility 2040 Plan, Route 20 Reconstruction (602659). If this is finalized, it would remove necessary funding for this important project to be able to move ahead and MassDOT would not be able to continue their work on this design.

Since 2005, there have been close to 400 accidents on this roadway in the Town of Oxford (many others on this road are investigated by the state). Many of these accidents have resulted in serious bodily injuries. The current roadway design, as constituted, is the cause of many of these accidents. Citizens who reside on this street or adjoining streets often have a difficult time entering on to Route 20 and have to seek alternate routes, the result of which is traffic congestion. One area of serious concern is Oxbow Road, attempting to enter onto Route 20 from this street is often very difficult.

Another safety concern is that there are school bus stops on Route 20, and the undivided roadway increases the chances of lane crossover accidents. As a result of the above concerns, part of our department protocol is to dispatch a Fire Truck, Ambulance and other apparatus whenever an accident at the intersection of Rte. 20 and 56 is reported.

While it is understood that many roadways and other infrastructures are in need of repair, the seriousness of this safety issue and the consequences of cancellation of this project necessitate my respectful request that you reconsider your vote to cancel this project.

Sincerely,

Michael Hassett
Chief of Police

6-July-2015

Central Massachusetts Metropolitan Planning Organization
2 Washington Square - Union Station - Worcester, MA 01604

Dear Members of the CMMPO,

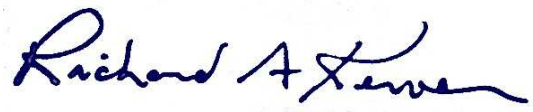
Please find attached my response to the Mobility2040 Draft Plan made available at http://cmrpc.org/workingdraftlrtp. This response is from the perspective of a bicyclist, my primary transportation being an electric-assist bicycle, and having become car-free, due to the now most egregious climate catastrophe underway. I believe the Draft Plan can be enhanced and that my response may enable that, so as to better serve the walking & biking community. I consider myself a climate protection advocate, have myself divested from the use of fossil-fuels, and use an electric assist bicycle as my primary transportation.

After having participated in the many opportunities made available to the public in the planning process, and having advocated for the City of Worcester becoming an increasingly ***bicycle-friendly city*** over time, and considering the necessary shift from carbon-emission intensive fuels, so a concomitant mode-shift to zero-emission vehicles, primarily the bicycle and electric-assist bicycle, my reading the Draft Plan was disappointing. My response summarizes in writing what I have been advocating in person.

I don't believe the Draft Plan is yet ready to be finalized. My hope is that it remain a draft until such a time as the deficiencies are adequately addressed. We simply don't have any time left for humanity to re-balance itself with nature and so must now take aggressive steps to reduce our collective global carbon-footprint. Worcester and the CMMPO and CMRPC planning region must do its part to make that happen. I suggest at the minimum, extending the public comment period, and a full re-working of the Draft Plan to better accommodate a vision of Worcester and the region becoming increasingly ***bicycle friendly*** year-by-year.

Becoming a ***bicycle friendly city*** must not be viewed as optional, and not be postponed until some future date after more data collection, analysis and so forth. I am asking for a clear, unequivocal commitment of our transportation dollars be allocated to the achievement of regional bicycle and pedestrian friendliness, for which there are numerous examples and guidelines, some of which I reference. In other words, moving into project implementation phases rapidly, rather than as a long-term initiative.

Thank you so much for the great work you do on our collective behalf.



Richard Kerver, Climate Protection Advocate, Car-Free and a Bicyclist
29 William St. Apt.13, Worcester MA 01609
phone: 508-753-8874, email: rkerver@gmail.com

cc: The Honorable Congressman James P McGovern
Gladys Rodriguez-Parker, Director Of Intra-Governmental Affairs
Staff of the CMRPC

Public Response

Respectfully submitted by Richard Kerver, A Climate Protection Advocate

The Big Idea

Long range planning should first and foremost be an exercise in visionary thinking. It starts with the premise of change and steps forwards till a set of goals posited by the vision are, in time, met or exceeded. A vision derived by consensus, not just by those who govern, but by the governed, those whose lives are vitally connected to the constructed and/or deconstructed environment urban planners would implement. That's why public input is so important for the Mobility2040. Not just the minor details of how much gets spent on which projects, but the sum total of all projects in the region, the big vision.

My vision, which I share with everyone in Worcester and the region who have committed to a fossil-fuel free, sustainable energy future, is a City that becomes ***bicycle friendly***, and quickly rather than as a mere long-term eventual goal. Bicycle friendly is the description of cities that have transformed their roadways, trails, parks and transportation infrastructure in a manner that fully promotes a life-style that does not require the burning of fossil-fuels with their concomitant release of greenhouse gas emissions. Because getting people out of their cars more & more requires it. Boston is a city that is bicycle friendly, by the metrics, and Worcester unfortunately is not. One need only visit our neighbor to the east to understand this shift in policy to advance bicycle and pedestrian transit.

Hence the Big Idea is to allocate transportation dollars towards Worcester and other towns in the region becoming **rapidly bicycle friendly** by allocating transportation dollars as if that were a major infrastructure project, in TIP terms.

Bicycle Friendly

For a description of what a Bicycle Friendly city is, how those places make it happen and why, reference https://en.wikipedia.org/wiki/Bicycle-friendly.

Bicycle-friendly

From Wikipedia, the free encyclopedia

Bicycle-friendly policies and practices help some people feel more comfortable about traveling by bicycle with other traffic. The level of bicycle-friendliness of an environment can be influenced by many factors resulting from town planning and cycling infrastructure decisions.

Contents [hide]

1 Town planning
2 Cycling infrastructure
2.1 Bicycle infrastructure in the Netherlands
2.2 CTC/IHT hierarchy
2.3 Traffic reduction
2.4 Benefits of bicycle-friendly communities
3 Trip-end facilities
3.1 Bicycle parking/storage arrangements
3.2 Other trip end facilities
4 Recognition
5 Vacations
6 See also
7 References
8 External links

Town planning [edit]

WIKIPEDIA
The Free Encyclopedia

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> *The manner in which the public roads network is designed, built and managed can have a significant effect on the utility and safety of cycling as transport.*

Hence, the degree to which people will increasingly adopt the modality for a majority of their local transit needs.

> *In 1996, the British Cyclists Touring Club (CTC) and the Institute for Highways and*

Transportation jointly produced the document "Cycle-friendly infrastructure: Guidelines for planning and design".[3] This defined a hierarchy of measures for cycling promotion in which the goal is to convert a more or less cyclist-hostile roads infrastructure into one which encourages and facilitates cycling.

I can say without equivocation that, while Worcester is making strides towards becoming bicycle friendly, its streets by vast percentage are ***cyclist-hostile.*** Try riding as I and many do. Get struck by a car and hospitalized, as I have. Its far from safe, far from bicycle friendly.

2-way bike lane on 1-way street

There are numerous ways the streets could be redesigned in a manner consistent to the principle local transit modality required by a clean & sustainable energy future. A cursory inventory by way of https://www.google.com/search?q=bicycle+friendly+cities provides a rich metaphor for implementation.

Again, this is said not to disparage the many positive steps Worcester is making or our urban planners who see the need for more. Strongly suggested...

Full segregation is sometimes effective

The CTC/IHT hierarchy

1. Traffic reduction. Can motor traffic levels, particularly of heavy vehicles, be reduced?
2. Traffic calming. Can speed be reduced and driver behaviour modified?
3. Junction treatment and traffic management. These measures include:
    - Urban traffic control systems designed to recognise cyclists and give them priority.
    - Exempt cyclists from banned turns and access restrictions.
    - Provide contra-flow cycle lanes on one-way streets.
    - Implement on-street parking restrictions.
    - Junction alterations, roundabouts with cycle paths around them, cycle-friendly junction design.
4. Redistribution of the carriageway -such as by marking wide curb lanes or shared bus/cycle lanes.
5. Cycle lanes and cycle tracks. Having considered and implemented all the above, what cycle tracks or cycle lanes are considered necessary?

For more information and reference, please see the ASLA's Guidelines for Healthy and Livable Communities (note [1]). Also attached is a recent article in The Guardian anticipating the *End of the Car Ag*e (note [2]) as a cultural shift:

It's a vision of cities in which residents no longer rely on their cars but on public transport, shared cars and bikes and, above all, on real-time data on their smartphones. He anticipates a revolution which will transform not just transport but the

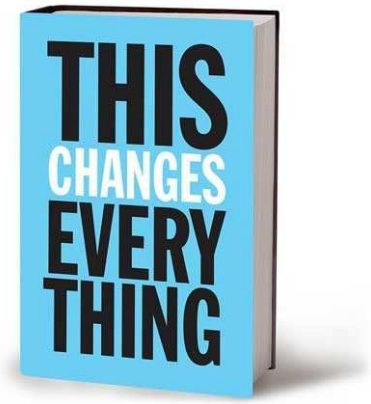
1 The American Society of Landscape Architects Guidelines for Healthy and Livable Communities; http://www.asla.org/contentdetail.aspx?id=23888

2 End of the car age: how cities are outgrowing the automobile, by Stephen Moss, 28 April 2015; http://www.theguardian.com/cities/2015/apr/28/end-of-the-car-age-how-cities-outgrew-the-automobile

cities themselves. "The goal is to re-balance the public space and create a city for people," he says. "There will be less pollution, less noise, less stress; it will be a more walkable city."

We Must Change Everything

At stake is not just the future of our cities, the locus of necessary change if we are to preserve a most-human environment, walkable, smart-growth oriented, but also the natural world on which life depends. Climate reality in 2015 demands a re-thinking of everything.



Naomi Klein was recently invited to the Papal conference subsequent to the release of his Encyclical. Naomi Klein is one of the world's most high-profile social activists and a ferocious critic of 21st-century capitalism, author of *This Changes Everything: Capitalism vs. The Climate*. She and Cardinal Peter Turkson are leading a conference on the environment, bringing together churchmen, scientists and activists to debate climate change action (note [3]).

The moral hazard before humanity is clear, continuing as we are along a path of continued high-energy production, transport and consumption, business-as-usual. Made explicit by Pope Francis in his Encyclical Letter to all, not just the Catholic faithful (note [4]).

> *Patriarch Bartholomew has spoken in particular of the need for each of us to repent of the ways we have harmed the planet, for "inasmuch as we all generate small ecological damage", we are called to acknowledge "our contribution, smaller or greater, to the disfigurement and destruction of creation".[14] He has repeatedly stated this firmly and persuasively, challenging us to acknowledge our sins against creation: "For human beings… to destroy the biological diversity of God's creation; for human beings to degrade the integrity of the earth by causing changes in its climate, by stripping the earth of its natural forests or destroying its wetlands; for human beings to contaminate the earth's waters, its land, its air, and its life – these are sins".[15] For "to commit a crime against the natural world is a sin against ourselves and a sin against God".[16]*

It matters not what faith one may presume. And it is not a mere call for prayer but a call to action, for a change in lifestyle, the day-to-day choices we all make. The meaning of *sin* is *missing the mark*, where here its the goal of caring for all Earth and the richness of nature and the vast biodiversity which humans share on this fragile planet.

Scientist are concerned, looking to the direct evidence of loss in biodiversity (note [5]).

> *Even under our assumptions, which would tend to minimize evidence of an incipient*

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3 Pope Francis recruits Naomi Klein in climate change battle, by Rosie Scammell, 27 June 2015; The Guardian, http://www.theguardian.com/world/2015/jun/28/pope-climate-change-naomi-klein

4 Encyclical Letter, Laudato Si', Of The Holy Father Francis, On Care For Our Common Home; paragraph 8.; http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html

5 Abstract; Accelerated modern human–induced species losses: Entering the sixth mass extinction; Gerardo Ceballos, Paul R. Ehrlich, Anthony D. Barnosky, Andrés García, Robert M. Pringle and Todd M. Palmer; Science Advances, 19 Jun 2015: Vol. 1, no. 5; http://advances.sciencemag.org/content/1/5/e1400253

mass extinction, the average rate of vertebrate species loss over the last century is up to 100 times higher than the background rate. Under the 2 E/MSY background rate, the number of species that have gone extinct in the last century would have taken, depending on the vertebrate taxon, between 800 and 10,000 years to disappear. These ***estimates reveal an exceptionally rapid loss of biodiversity over the last few centuries, indicating that a sixth mass extinction is already under way****. (note [6])*

There is no doubt that we are headed in the wrong direction, and the calls by various religions, scientific and political leaders remind us that we must *change everything*, and fast, if we are to keep a habitable planet.

The Inadequacy of the Mobility2040 Draft

Much in the draft is commendable. The most relevant section in the draft Mobility2040 Plan begins with

While recreation has been the primary use for bicycling in the past, transportation officials have recognized that it is increasingly becoming the primary mode of transportation for everyday activities. Nationwide, communities large and small are turning to bicycling to complete short trips, this holds true for the CMMPO region. According to the 2010-2011 Massachusetts Household Travel Survey, approximately 0.5% of CMRPC planning region residents commute to work via bicycle, while 0.2% of students travel to school via the same mode. Cycling can be more efficient, affordable, and convenient than traveling by vehicle on congested streets. {IV-9}

The language lends itself to the opportunity envisioned herein. But a closer reading of the draft demonstrates that as far as how the transportation dollars are being allocated, it is still a business-as-usual approach, doing little of consequence to make the necessary difference in our roadways that a radical re-envisioning of our city-scapes require, considering the aforementioned realities of climate change, loss of biodiversity and the sixth mass extinction event.

-and-

It is imperative that safe, easy to use facilities are available where there is a high level of pedestrian activity. For CMRPC planning purposes, a pedestrian is any person traveling on foot or wheelchair (manual or motorized). {IV-3}

Personally, this stated goal is of paramount importance. In the two years that I have been car-free, using an electric-assist bicycle (I'm disabled), I have been struck by an automobile twice, once hospitalized. The idea that small, light bicycles can safely share the roadways with large heavy fossil-fuel intensive vehicles, has been repeatedly been quashed.

-and-

USDOT's Accommodating Bicycle and Pedestrian Travel: A Recommended Approach, a policy statement drafted in response to TEA-21 that calls for expanded focus on bicycle and pedestrian accommodation. {IV-3}

GreenDOT is to promote the healthy transportation options of walking, bicycling, and public transit {IV-3}

6 https://en.wikipedia.org/wiki/Holocene_extinction

identify bicycle/pedestrian/transit gaps in the region {IV-4}

-and-

Table IV-1: 2009-2010 High Priority Pedestrian Clusters in the CMRPC Region

Crash Count	# Fatal	# Injury	# Non-Injury	EPDO	Street #1	Street #2	Town	Rank
103	0	79	24	419	MAIN STREET	SOUTHBRIDGE STREET	WORCESTER	3
37	0	26	11	141	MAIN STREET	CAMBRIDGE STREET	WORCESTER	
26	0	20	6	106	MAIN STREET	HAMMOND STREET	WORCESTER	
25	0	20	5	105	MURRAY AVENUE	MAIN STREET	WORCESTER	
24	1	17	6	101	MAIN STREET	MECHANIC STREET	SPENCER	
22	0	18	4	94	GRAFTON STREET	ORIENT STREET	WORCESTER	
24	1	14	9	89	BELMONT STREET	INTERSTATE 290	WORCESTER	
18	0	16	2	82	BELMONT STREET	EASTERN AVENUE	WORCESTER	
18	1	11	6	71	PARK AVENUE	PLEASANT STREET	WORCESTER	
19	0	12	7	67	INTERSTATE 290	VERNON STREET	WORCESTER	

-but.....

CMRPC staff will begin working on the update to the Regional Bicycle and Pedestrian Plan in the summer of 2015 {IV-8}.

All the above is a mere promise that in the next cycle of planning, some improvements might be identified. Here comes a loud voice to say that while the intention may be noble, it is all too little, too late. This is a twenty year plan from 2020 to 2040. It does not ***commit*** the spending of our transportation dollars so as to provide a bicycle friendly city – it just suggests that its a good idea. Not enough, not in sync with the need. The draft Mobility2040 Plan needs to be amended.

-and-

Preliminary shoulder width analysis via the CMRPC Pavement Management Program has identified over 150 miles of roadway in the region with shoulders wide enough for bicycle accommodation. {IV-12}

The presumption is that bicycle lanes might be added only if the shoulder of the road is adequate. Meaning business-as-usual for the fossil-fuel laden vehicles now on the road, and sorry, we can't do more for bicyclist, at least now.

There are better alternatives. For instance, many cities, in the dense urban environment will declare car-free zones. Whole streets can be dedicated to walking & bicycling community. Roads carefully selected so as to fully accommodate the safe passage of all modalities. Or take parallel roads and make them one-way, dedicating the remaining, formerly two-way lane to fully segregated bicycle transit.

Or like Boston, stop subsidizing the parking of cars by giving over streets to parking space. Turn that valuable road-based real estate into bike lanes. Leave the parking of cars over to private and/or municipal parking garages. Locate a bike-share program at every such garage so you park, then walk or bike to your final destination.

Again, this does not require lots and lots of more time, data collection, analysis, reporting, thinking etc. Now is a time for action & implementation and the draft Mobility2040 must reflect a commitment to that. It could come as a simple goal to turn 1% of city streets per year into

multi-modal transit lanes, bicycle friendly. That way, by 2040, near half of our city would be transformed.

While possibly outlandish to a motorist used to and wanting more business-as-usual, from a bicyclist perspective, the case could be made that the majority of dollars in the next 20 year spending cycle be spent on implementation of an extensive vision of recasting our city as pedestrian & bicycle friendly. To balance out decades of mis-spending and mis-allocation based on the availability of a cheap polluting fuel with a heavy carbon-footprint.

Again, a bicycle friendly city is an invitation to everyone to switch their mode of transportation and chose low-carbon modalities like the bicycle and electric-assist bicycle for a majority of their local transportation needs.

Worcester is hilly and many people, especially those who are aging or otherwise disabled (as I am), may find travel by bicycle too onerous, too slow to be practical. Enter the electric-assist bicycle. Its still a bicycle, but provides a boost to get up those hills. Many see the emergence of electric vehicle technology, the advances made in batteries and improvement in electric motor efficiencies and torque, as a paradigm shift, a just-in-time set of developments that enable people to abandon their carbon-fuel modes of transport. Its these developments that have led to a revolution in many places around the world in the use of electric-assist, whether on two, three or four wheels.

Doing so will have enormous positive economic effects as well.

The Millennial and after generations, who are the principal beneficiaries and/or victims of our policy decisions now, are largely rejecting the ownership models of their progenitors, preferring small houses in smart-growth cities and without car ownership at all. Its the reason there are more and more bicycles in use in our beloved city. So the most aggressively proactive cities and communities reaching to become the most bicycle friendly, will also be the winners in the game of retaining its young urban professionals, the jobs they fill and/or create, and the newest brightest entrepreneurial initiatives. As a bone-fide College town, Worcester would win, but only to the degree it can retain its graduates.

My hope and expectation is that this not occur slowly with a trickle of dollars, but fast, with lots of dollar, a get-it-done approach. By elevating bicycle friendly passage as a major infrastructure project, it could happen quickly and correct long-term deficiencies in the planning and budget allocation process.

Here are the *Major Infrastructure Projects* that have been identified as *Bike/Pedestrian in the draft plan:*

			Bike/Ped
3	Boston Worcester Air-Line Trail	Shrewsbury/Westborough	Use of former trolley R-O-W for multi-use trail. Connects with Southborough + Framingham. Serves area of high population and employment.
2	Multimodal Connection: Blackstone River Greenway to Mass-Central Rail Trail	Worcester/W. Boylston/Boylston	Regional connection between two major multimodal trails. Facilitates East Coast Greeway expansion.
1	Blackstone River Greenway (Segments 3,4 and 5)	Uxbridge, Northbridge, Grafton, Sutton, Millbury	13 miles in length.
2	Pedestrian Connection: Blackstone River Greenway to Mid-State Trail	Blackstone Valley	Regional pedestrian connection between two major trails. Expands recreational opportunities.

{Table V-2 Major Infrastructure Project Tiers, V-27}

With the elaboration:

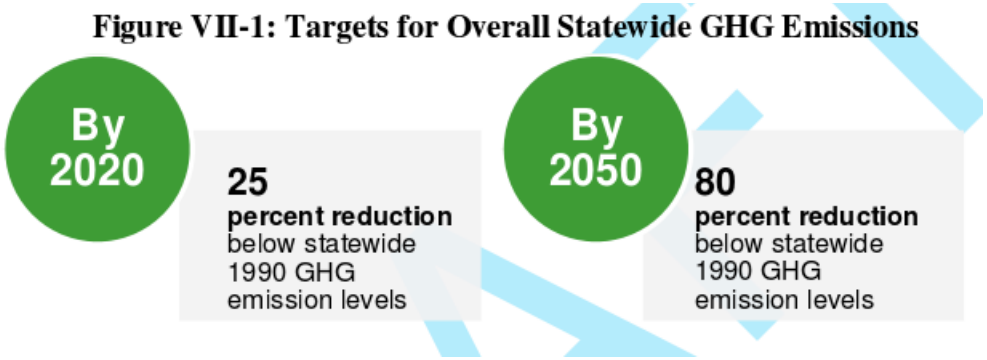
> *Multimodal Connection - Blackstone River Greenway to Mass-Central Rail Trail : An "Initiative", meaning "Staff will pursue an initiative to collaborate with the lead agency to establish costs and project scope" {V-28}*

This needs to be advanced from an “Initiative” to a “Project”, slated for implementation, rather than more and more study. Its implementation would create a state-of-the-art south-north bicycle friendly linkage through the City of Worcester. Doing so would significantly advance the capacity of the region in its planning, design and construction of bicycle friendly routes.

The Blackstone heritage corridor and national park, the East Coast Greenway and Massachusetts Central Rail Trail are all signature long-term projects of significant potential value to the region, recreational and economic. The route is through Worcester. This is good, better if more adequately supported by the draft Plan.

> *Based on the staff’s qualitative analysis the overall benefit for each of the options was “moderate”. The only project that would bring in huge amounts of GHG savings is the I-495/ Masspike Interchange project. Other projects have some moderate or minimal GHG savings. {V-41}*
>
> *-and-*

Figure VII-1: Targets for Overall Statewide GHG Emissions



> *{VII-4}*

It should be more than obvious that the reduction of GHG must occur primarily through a shift in modes of transport. Bicycle friendly has many benefits, one of them being it is zero emission transport. It is not sufficient to reiterate state goals for GHG reductions and then advance a Plan that does not significantly advance its achievement.

> *This approach by the MPO is consistent with the greenhouse gas reduction policies of promoting healthy transportation modes through prioritizing and programming an appropriate balance of roadway, transit, bicycle and pedestrian investments; as well as supporting smart growth development patterns through the creation of a balanced multi-modal transportation system. {VII-5}*

But, the Draft Mobility2040 does not do that! The balance is not there!

Conclusion

Mobility2040 is an opportunity to redirect our energies to making our great city better for ALL life, not just human, but non-human. The will to do so requires a grand vision that is sensitive to the damage being wrought by continued reliance on fossil-fuel intensive modes of transport. That damage is in the atmosphere – climate change. Its in the biosphere – the 6th mass extinction and loss of biodiversity. It is in the human-sphere – toxic emissions. Walkable, bike-able cities are better in every way possible. Its up to our urban planning community to fill in all the details and ensure our transportation dollars are consistent with this vision of our city and region.

The Mobility2040 Plan coincides with the release of Pope Francis' Encyclical and much international attention leading up to COP21 in Paris latter this year, to hammer out a new international climate protection treaty to reduce our collective emission of greenhouse gases. The G7 nations recently adopted a long-range policy to completely abandon reliance of fossil fuels by the end of the century. The Commonwealth of Massachusetts has already adopted many forward-thinking policy initiatives. The time for Worcester becoming wholly bicycle friendly and in the near-term is now, not latter. In this planning cycle, not the next.

There's a mismatch in the long-term vision and how dollars will be spent. While every one involved in the planning process apparently agrees that alternative modes of transportation than the conventional fossil-fuel intensive automobile need to be supported, the dollars are not flowing in a manner consistent with that intent. The Draft Mobility2040 must be amended to correct for the deficiencies.

Thank you for your active consideration. Please contact me for more information, assistance in re-drafting the Mobility2040 Plan, or route designation guidance.

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End of the car age: how cities are outgrowing the automobile

Cities around the world are coming to the same conclusion: they'd be better off with far fewer cars. So what's behind this seismic shift in our urban lifestyles? Stephen Moss goes on an epic (car-free) journey to find out

Stephen Moss

Tuesday 28 April 2015 02.00 EDT

Gilles Vesco calls it the "new mobility". It's a vision of cities in which residents no longer rely on their cars but on public transport, shared cars and bikes and, above all, on real-time data on their smartphones. He anticipates a revolution which will transform not just transport but the cities themselves. "The goal is to rebalance the public space and create a city for people," he says. "There will be less pollution, less noise, less stress; it will be a more walkable city."

Vesco, the politician responsible for sustainable transport in Lyon, played a leading role in introducing the city's Vélo'v bike-sharing scheme a decade ago. It has since been replicated in cities all over the world. Now, though, he is convinced that digital technology has changed the rules of the game, and will make possible the move away from cars that was unimaginable when Vélo'v launched in May 2005. "Digital information is the fuel of mobility," he says. "Some transport sociologists say that information about mobility is 50% of mobility. The car will become an accessory to the smartphone."

Vesco is nothing if not an evangelist. "Sharing is the new paradigm of urban mobility. Tomorrow, you will judge a city according to what it is adding to sharing. The more that we have people sharing transportation modes, public space, information and new services, the more attractive the city will be."

The Vélo'v scheme is being extended, car clubs that use electric vehicles are being encouraged, and what Vesco calls a "collaborative platform" has been built to encourage ride-sharing by matching drivers with people seeking lifts. There is, he says, no longer any need for residents of Lyon to own a car. And he practises what he preaches - he doesn't own one himself.

The number of cars entering the city has fallen by 20% over the past decade, without even a congestion-charging scheme (Vesco says it would impose a disproportionate burden on the less well-off, who tend to drive higher-polluting vehicles). And even though Lyon's population is expected to rise by more than 10% over the next decade, he is targeting a further 20% drop in car use. The car parks that used to run alongside the banks of Lyon's two rivers have already been removed, and human parks opened in their place. Vesco says someone returning to Lyon for the first time in a decade would barely recognise the city.

Birmingham, which vies with Manchester for the title of England's second city, has been following the experience of Lyon and other European cities closely, and is now embarking on its own 20-year plan called Birmingham Connected, to reduce dependence on cars. For a city so associated in the

public mind with car manufacturing, this is quite a step. The initiative is being driven by the veteran leader of Birmingham city council, Sir Albert Bore, who talks airily about imposing a three-dimensional transport plan on the two-dimensional geography of the city: “French and German cities all have an infrastructure which has a far better understanding of how you need to map the city with layers of travel.”

“Multi-modal” and “interconnectivity” are now the words on every urban planner’s lips. In Munich, says Bore, planners told him that the city dwellers of the future would no longer need cars. Bikes and more efficient public transport would be the norm; for occasional trips out of the city, they could hire a car or join a car club that facilitated inter-city travel. The statistic everyone trots out is that your car sits outside, idle and depreciating, for 96% of its life. There has to be a more efficient way to provide for the average of seven hours a week when you want it.

Car clubs offer a second statistic. Whereas a personally owned car caters for an individual or a family, a car-club car can service 60 people. As I type this I look at the VW Golf sitting outside my window, which I last drove a fortnight ago. Private cars are wasteful and expensive.

Bore recognises that his plan to transform his city will not be easy, and will require a healthy dose of public education. “Birmingham was seen as the champion of the car,” he says, “and as a result it didn’t develop an underground or the tram network you see in major cities across Europe. There’s been a failure to develop those systems because there’s been no longer-term vision.” Birmingham now has a long-term plan - but what it doesn’t have is the money. It needs £4bn; so far it has raised only £1.2bn. Central government, private-sector developers and local businesses are going to have be convinced it’s worth it.

Anne Shaw, Birmingham’s head of transportation services, walks me round the centre of the city to show me the changes already taking place. The single tram line, which runs from Wolverhampton, is being extended; the gyratory road which cuts off many of the municipal buildings is being taken out and traffic re-routed; forbidding concrete subways are being removed; cycle lanes are being put in, and a fast bus service is planned.

One day, perhaps, Birmingham will even have its own underground system, though that is many years and millions of pounds away. Commuting into Birmingham is currently split 50-50 between car and public transport; that, too, has to change - in London, only 15% of commuters use a car. In Birmingham, the district in the centre which houses Symphony Hall and the new state-of-the-art library is called Paradise. One day, Bore hopes it will live up to its name.

The planners in Birmingham accept they are late to the party. London, which has pioneered congestion charging and has a well-integrated system of public transport, has led the move away from cars over the past decade, during which time 9% of car commuters have switched to other forms of transport. “People in London have a lot of options and there’s been huge growth across all modes,” says Isabel Dedring, the American-born deputy mayor for transport in the capital. “There’s been a massive increase in investment in public transport.”

Dedring says London has always been progressive in terms of public transport - its narrow, twisting roads were never conducive to the automotive domination that occurred in many US and European cities in the 1960s and 70s, when the car was king. But from the turn of the millennium, there has been a concerted attempt to encourage switching to other modes of transport, and the past decade has seen a 30% reduction in traffic in central London.

“Traffic levels have gone down massively,” says Dedring, “partly because of the congestion charge, but also because we are taking away space from private vehicles and giving it to buses through bus

lanes and to people through public realm [developments].” And now to cyclists, too, with the planned “cycle superhighways” and cycle-friendly neighbourhoods being trialled in three London boroughs.

In Waltham Forest, which is running one of those pilot schemes (tagged “mini-Holland”), I go cycling with councillor Clyde Loakes, deputy leader of the council and the cabinet member responsible for the environment. What used to be rat runs in the area now known as Walthamstow Village have been closed to through-traffic, and at a stroke the number of vehicles using the area has dropped by more than 20%. The area is remarkably quiet and relaxed when we cycle around one weekday afternoon; indeed it comes as quite a shock when we leave the confines of the village and are suddenly pitched back into the noise and traffic as we head to the town hall.

Loakes says the trial is an attempt to alter behaviour and the feel of the area, but is also a recognition that change is already occurring. “In Waltham Forest, we have an increasing number of households without a car. Public transport is getting better; we have an increasingly young demographic; and in many of the developments being built car parking is not a priority, so car ownership is not an option.”

To put it more bluntly: many city developments are now predicated on there being no car spaces for residents. Developers worried about this initially, but have come to realise it doesn’t pose a problem for the young professionals likely to be buying their flats, so have accepted the demands of council planning departments.

The inner-London borough of Hackney, which prides itself on being the greenest council in London, tells a similar story. “We are trying to create a more liveable environment,” says councillor Feryal Demirci, the cabinet member for neighbourhoods, “and car-free developments are one way of doing that.” She says almost 90% of the developments currently under way are completely car-free, with the council guaranteeing alternatives to personally owned cars, including a commitment that every resident will live within three minutes of a car-club bay.

The statistic Hackney is proudest of is that more than 15% of its residents commute to work by bike. “It’s about creating an environment where it’s easier for people to cycle or take the bus, so they’re not relying on cars,” Demirci says. Car ownership in the borough has dropped over the past 10 years: whereas a decade ago 56% of households did not own a car, that figure now stands at 65%. Hackney, which is not on the underground network, also claims the highest level of bus usage in London. Though the population has risen by 45,000, the number of cars owned by people in the area has fallen by 3,000. These are trends that urban planners elsewhere would kill for.

This model of denser, less car-dependent cities is becoming the accepted wisdom across the developed world. “The height [of buildings] is going up; density is going up; borough policies and London plan policies are all about intensification and densification of land uses,” explains Ben Kennedy, Hackney’s principal transport planner. “We’re probably going the way of Manhattan. People live very close and they don’t travel at all because everything is on their doorstep; the population in one block is so high, it can support all the amenities you could ever want. We’re slowly going in that direction in London.”

A revolution is coming, but it costs money

Rikhard Manninen is another man with a plan – a very large plan, which is laid out on a table in his office in the centre of Helsinki. Manninen is director of the city’s strategic urban planning division. The project is a vision of how the city will look in 2050. It will have a lot more people – the population is projected to rise by 50% – but with much less dependence on cars. The city’s population density will be increased; many of the new high-rise apartment blocks will not have residents’ car parking; key arteries into the city will be replaced by boulevards; more and more space will be given over to

cycle lanes. A report on the plan in the Helsinki Times last year confidently predicted: “The future resident of Helsinki will not own a car.”

“Agglomeration” is the buzzword that planners such as Manninen like to use, and the benefits which derive from it are driving the vision of a new city. “When you are located quite close, businesses can interact more easily; people can walk to work and use public transport. It’s more efficient.”

In many cities, the era of the suburban commuter, along with the era of the car, is drawing to a close. Manninen no longer wants a city with a single centre; he envisages a multi-polar city with half-a-dozen hubs where people live, work, shop and play. This will reduce transport congestion and generate a series of vibrant, efficiently organised, semi-autonomous units - that’s the plan, anyway.

Though Finland is seen as a pioneer in sustainable transport, the reality is rather different. Because the country came late to urbanisation and there was a huge amount of development in the 1950s and 60s, commuting by car is more entrenched than in some older cities. Finns have tended to live in the suburbs, driving to the centre of Helsinki to work and to their beloved country cottages at weekends. But Manninen echoes Vesco in Lyon in his view that attitudes are changing: “The younger generation are no longer car dependent. They are less likely to have a driving licence than previous generations.”

Generation Y, the so-called millennials now in their 20s and early 30s who have come of age in the digital era, seem less wedded to possessions than their baby boomer predecessors. Surveys show that the one object that is prized is the smartphone, and the future of transport is likely to be based not on individually owned cars but on “mobility as a service” - a phrase supposedly coined by another Finn, Sampo Hietanen, chief executive of Intelligent Transport Systems (ITS) Finland. Consumers will, so the theory goes, use their smartphones to check ultra-detailed travel news, locate car-club cars or bikes, check for parking spaces, call up Uber drivers, and arrange shared rides. Who needs a personally owned car?

While in Helsinki, I meet a delegation from the city’s Regional Transport Authority. I’m struck not just by their commitment to sustainable transport, but their willingness to engage with the public. They send staff into schools and workplaces to try to win converts to walking, cycling and public transport, and take their message to older people, who are usually the most resistant to abandoning their cars.

One of the initiatives they are proudest of is their Kutsuplus (“Call plus”) bus service - a fleet of nine-seater minibuses whose routes are determined by the bookings they get on any given day. It’s a great idea, and I book a bus to take me from their offices into town. It arrives quickly, picks me up at a bus stop just 100 metres away, and costs €5 for the two-mile trip. The problem is that, so far, Helsinki only has 15 buses, and doesn’t have the funding for any more. Like many of the schemes currently under way, it’s at the pilot stage. There’s a revolution coming, but revolutions cost money.

“We are not making a car-free Helsinki - that is not possible,” says Reetta Putkonen, director of the transport and traffic planning division, who I meet for lunch at an exhibition space devoted to the city’s vision of the future. “But we are going to take control of where the cars are and how they are used, so that we will have places where it’s really nice to walk, it’s very fast and easy to bike, and public transport is highly efficient. Walkers will be the kings, and the cyclists will have their own paths. We will still have cars - people need them for carrying goods - but their speeds will be very low and there won’t be so many of them. Our planning shouldn’t be based on cars and on parking. It will be a balanced system.”

After lunch, I meet another Reetta - not all Finnish women are called Reetta, they assure me. Reetta Keisanen is the city’s cycling coordinator, and she has brought two of the department’s pool bikes for us to undertake a tour of the city. She takes me first along a cycle path that used to be a rail track,

linking the town centre with the harbour. Halfway along the route, there is an electronic register counting the cycles as they pass - I am the 54,672nd so far this year. Reetta II tells me that 96% of the residents of Helsinki are pro-cycling, though Reetta I had cautioned that the figure might be lower if motorists realised how much of their road space was being eaten into.

There are only three gears on the bike and I am not dressed for this sudden spasm of activity - instead of shorts, I am wearing thick trousers and jacket - so it is a struggle, especially on the gritty areas near the seafront. It is, though, pleasant when we eventually get there, and sit in the spring sunshine in the garden of the Regatta, a tiny wooden café which is one of Helsinki's best-loved attractions.

Keisanen, who is in her mid-20s and committed to the sustainability cause, is convinced a major change is afoot. "We've got lots of work to do because many Finns still own cars," she says, "but in cities it is now possible to live without a car, and young people are buying fewer cars than older people." Cycling in Helsinki has doubled since 1997, and Keisanen predicts further increases as the cycling network expands. I suggest to her that not all cyclists behave well - I am thinking of the ones I see in London who whizz along pavements and go in the wrong direction down one-way streets - but she has a good answer. "Cities get the cyclists they deserve. If you have good infrastructure, you will get good cyclists. It's the same with drivers and pedestrians."

To drive or not to drive: have we reached 'peak car'?

All the trends in cities appear to be moving in the direction favoured by environmentalists, so do they think they are finally winning? "We're at a stage now in history where people, especially young people, want to have the choice whether to drive or not to drive," says Jason Torrance, policy director at sustainable transport group Sustrans. "We've seen a huge change over the past five years around an ownership model. You now have Spotify and other on-demand services. My entire record collection is in the loft. We have everything on iTunes and Spotify and my son, who is six, only vaguely knows what a CD is."

Torrance says the appetite is there for alternatives to the car, and that some cities - both in Europe and in the developing world, notably China - are responding to the challenge. The pro-car attitude which was dominant in the UK from the 1960s through to the end of the Conservative Thatcher era has certainly declined but, he says: "We have a poverty of ambition in the UK in our relationship with cars, and our city leaders should be a lot bolder."

Sustrans' response to what it sees as government inertia is to get involved in grassroots projects such as its DIY Streets scheme, where it works with local councils and residents to reduce the way cars affect their streets. The aim is to let the residents decide what they want in terms of traffic flow and number of parking spaces. "We find residents on DIY streets drive much less, there is a significant increase in the number of kids playing on the street, and there is a lot more cycling," he says.

Torrance believes we are still wedded to the car as a status symbol, but others disagree. Stephen Bayley, who has written several books on car design, is convinced the age of the car is coming to an end. "It's five minutes to midnight for the private car," he says. "It's no longer rational to use cars in cities like London." Cars were invented as agents of freedom, but to drive (and, worse, to have to park) one in a city is tantamount to punishment.

Bayley also believes the arrival of driverless cars will further undermine the driving experience. Sex, beauty, status, freedom - all the words which advertisers have tried to associate with cars over the past 50 years - have been replaced by mere functionality.

"There was some research a year or so ago which interviewed people in their 20s and 30s," he says.

"The great majority said they would rather give up their car than their smartphone, and in their list of cool brands, no car manufacturer appeared in the top 20. That's a very significant change. Twenty years ago, if you'd asked young people, BMW and other car brands would certainly have featured."

Bayley draws my attention to the French philosopher Roland Barthes' homage to the Citroën DS, which appeared in his 1957 book Mythologies. "I believe that the automobile is, today, the almost exact equivalent of the great Gothic cathedrals," wrote Barthes. "I mean, a great creation of the period, passionately conceived by unknown artists, consumed in its image, if not its use, by an entire populace which appropriates in it an entirely magical object." These days, cars all look the same and pretty soon, if the manufacturers have their way, we won't even have to drive them.

Christian Wolmar, the transport analyst who is seeking the Labour nomination for the London mayoralty in 2016, welcomes this demystification of the car. "Attitudes have changed," he says. "My stepson didn't bother passing his driving test till he was 27. None of my kids are car-oriented in the way that we were. When I was a teenager [he is now 65], we lived in Kensington and I used to borrow my mother's car, drive into the centre in the evening, park it somewhere, go to the cinema and a nightclub, then drive home again. That is inconceivable today with drink-driving laws, parking and the general hassle of it all. We have begun to shift away from cars. On trains, people can use their mobile devices; 'peak car' seems to have been reached in America, with young people favouring what they call transit; and there is a trend of younger people no longer seeing the car as central to their lives."

Peak car. This is a phrase I hear again and again. The question of whether there is now an irreversible move away from cars towards other forms of transport is central to the cars-in-cities debate. Glenn Lyons, founder of the Centre for Transport and Society at the University of the West of England, is in no doubt that something fundamental is happening. "For the past decade, predating the global economic downturn, car traffic has been flatlining. This is true not only of the UK but of a number of other developed economies around the world."

According to Lyons: "Young people have stood out particularly. Car licence acquisition has been going down among younger age groups, and there are strong suspicions that the digital age is contributing to why people now have less reliance on physical mobility. We are in the midst of a fundamental regime transition in society. We are increasingly seeing the car as a functional technology to get from A to B, rather than the much more symbolic representation it had in defining society in previous generations. That is not to suggest the car is done and finished with, but I believe it will become a background technology."

David Metz, former chief scientist at the Department for Transport and now visiting professor at University College London's Centre for Transport Studies, published a book last year called Peak Car, in which he argued that "car use in developed economies has reached a maximum" and that "we have come to the end of an era in which we have steadily travelled more". "Car use per capita in most of the developed economies has stopped growing," he tells me, "and stopped growing well before the recession. If you look at the UK data, you see a long-term rise in car travel which came to a stop in the late 1990s."

Holding out against what is rapidly becoming the orthodoxy is Stephen Glaister, former professor of transport at Imperial College and about to retire as director of the Royal Automobile Club Foundation: "Until the 2008 recession, broadly speaking there was continued growth [in car travel]," he insists. "Then the young age group were very badly hit economically, so it's not surprising their take-up of driving licences is falling. To what extent that's also to do with some fundamental change in attitudes remains to be seen. Let's see what happens when they get to 30 and have a family."

Glaister points out that the Department for Transport is still assuming an overall increase in traffic of more than 25% by 2040. “You can make different assumptions about oil prices and demographic effects,” he says, “but whichever way you look at it, you’re going to get substantial traffic growth.” Stephen Joseph, executive director of the Campaign for Better Transport, counters that the DfT is hooked on out-of-date thinking: “What we are still battling with is a bunch of policies, design manuals and ways of thinking that are driven by 1989; that where we’re going to end up is Los Angeles and that’s the natural order of things. But that’s not true. It’s not even true worldwide: there are examples, particularly in parts of Latin America, of cities that have been built around buses rather than cars. The idea that the natural end of development is Los Angeles - even Los Angeles doesn’t think that now.”

So where does this leave car manufacturers? At a conference on driverless cars organised by the Society of Motor Manufacturers and Traders (SMMT), I buttonhole BMW executive Glenn Schmidt, who is giving a talk on what this future generation of cars means for a manufacturer such as BMW, which has traditionally put great emphasis on the driving experience. In his talk, he admits we are now seeing “a shift from ownership to accessing mobility”, and that young people are less likely to own cars than previously. Hence BMW’s backing for DriveNow, a car club which has established itself in Germany, the US and, more recently, central London.

“There is a fundamental change taking place,” Schmidt tells me, “and if you look at dense urban environments with traffic jams, the solution can’t be to stuff more cars into that environment.” So BMW will sell fewer cars? “We obviously have the cars in DriveNow; usually younger people choose to use these, and later they will move into buying cars. DriveNow is a mechanism to attract young people. It gives us an edge by attracting younger people and bringing them to our brands, and later on they will be interested in buying our vehicles.” That, at least, is what car manufacturers are hoping.

Jean-Philippe Hermine, vice-president of strategic environmental planning at Renault, which has pioneered electric cars, accepts that vehicles are now regarded differently. “The relationship with the car is changing,” he says. “You can question the need to own a car. Some people are looking for more functionality. With our electric cars, where customers can rent the battery, we are to some extent selling mobility and mileage more than a product.”

Disruption is coming - especially if Google and Apple bring their experiments with driverless cars to fruition - and there are sure to be casualties, but for the moment the manufacturers are citing the old adage that every crisis is an opportunity. No one wants to be left behind - Autolib’ is poised to come into London with a fleet of electric cars, and will also take over the running of the charging infrastructure in the capital - but eventually consolidation in the car-club market seems inevitable, with a few national players dominating, as with mobile phones. This is an industry in which scale will be everything.

“We’re going to see a very different state of play over the next couple of decades,” says Richard Brown, manager of Ford’s advanced product group, “and the car is clearly going to be part of the internet of things that everybody is talking about. You have to be prepared to embrace the potential disruption and be excited by the challenges that lie ahead. We’ve seen over the past five or 10 years a number of companies that didn’t recognise the changes that were happening around them - and they don’t exist any more. Look at the Kodaks and Nokias of this world. We don’t want to allow ourselves to become a Nokia.”

“People think we love our cars, but do we?” Sampo Hietanen asks me, following a seminar staged by the thinktank Nesta to discuss mobility-as-a-service. “If you get a good enough service-level offer, you will switch,” he says. “If I offer £100 of free use of taxis and guarantee you can do all your trips by

taxi, people will say, 'what do I need a car for?'"

Hietanen argues that in the future, instead of buying cars, we will have a monthly contract with a supplier which meets all our mobility needs. So how long will it be before we see these mobility service providers, as he calls them, start to appear? "I'm expecting the first services at the start of next year," says Hietanen. "It won't be long before someone is providing this in London."

Transport consultant George Hazel, another of the speakers at the seminar, cites a report which anticipates 16 major mobility providers entering the global market. "The idea is that a supplier understands my needs, constantly learns about my profile, and gives me a package according to what I'm prepared to pay." For mobility suppliers, he says, the attraction will be that once they have you as a customer, they will be able to offer you a range of services in addition to transport.

Hazel's vision reminds me of a technology consultant I talked to at the SMMT conference, who said that in the future, the car that people drive (or that drives them) will be less valuable than the data derived about the person from the vehicle's connectivity - where they travel, what they listen to or watch as their driverless vehicle ferries them around, where they take their holidays, even how they sit in the car. He anticipated a time when connected, autonomous cars were given away, just so suppliers could add the recipient to their customer base and access that data. The car as loss leader.

Cities of the future – without cars?

On a sparkling spring morning, I meet David Nelson, head of design at architects Foster and Partners, and Bruno Moser, who heads its urban planning division. Increasingly, Foster and Partners is interested in designing whole cities, and in trying to take the sustainability message to the developing world. In Abu Dhabi, it has spent the past 10 years creating Masdar City, an environmentally friendly community which will eventually grow to 100,000 people and in which cars are kept out of the centre, and walking and cycling encouraged.

"We were trying out zero-carbon, zero-waste thinking, and mobility plays a key part in that," says Nelson. What he calls "carbon cars" are kept at the perimeter, and in the centre Foster and Partners have designed a personal rapid-transit system similar to the pods used at Heathrow's Terminal 5. The crash of 2007-8 slowed the development of Masdar, and so far only the first two phases have been completed, but Nelson insists the project has been a success, despite criticisms of the slow rate of progress and a lack of affordable housing that means many workers have to commute to the city, undermining some of its key goals.

Foster and Partners is more interested in the way cities are evolving in the developing world than in Europe. Moser thinks the battle against the car has been more-or-less won in the west, where car ownership in cities is lower than in suburban and rural areas. But in the developing world, the opposite is true: city dwellers are wealthier and more likely to own cars, and unless the public can be educated in the merits of sustainability and cities are created that aren't car-dependent, there will be exponential growth in car ownership and usage.

"If cities in the developing world go through the same cycle that we have in the past 50 years, we have a problem," says Moser. Nelson believes there is a "great opportunity" for radical new solutions, but worries that "the desire for the middle-class lifestyle, which includes a big car" will get in the way. "If you start out planning with cars in mind, everybody learns from the US, so in the middle of cities you'll get six-lane roads. The car becomes king and you design for that, and everybody forgets about everything else. That is still happening a lot in Asia, and when we get a project we try to convince everyone that's not the right thing to do."

Even in a traffic-clogged, car-fixated megacity such as Mumbai, however, there are glimmers that the anti-car lobby is gaining some traction. Last October, the Equal Streets movement began closing one four-mile stretch of main road there each Sunday morning so that residents of a city desperately short of public space could walk, cycle and play freely. And despite Mumbai politicians' penchant for building new flyovers, the sheer crowdedness of street life and poor state of the roads are surely a disincentive to owning an expensive "status symbol" car.

The final stop on my car journey is the Future Cities Catapult, which I visit on its first day in new offices on the edge of the City of London - so new the smell of fresh paint is overwhelming. The government has set up these trendily named catapults in a number of key areas - energy, transport, cell therapy, the digital economy - to encourage innovation and act as a bridge between academia and industry. Here, surely, they will have a vision of where we are heading.

"I hope we are at peak car," says Dan Hill, executive director of futures and best practice, when we settle down to talk in their showroom-cum-lounge. What, even in the developing world? "They have an opportunity to leapfrog and not make the same mistakes we have over the past 50 years," he says optimistically.

"If the 20th-century approach to solving a mobility problem, just like solving a housing problem, was to build some roads or add some rail, in the 21st century we have to adopt a non-building approach, optimising the existing built-fabric we have," Hill says. "That's where the possibility of, say, a shared, autonomous, self-driving car service could radically transform the way people move around a city without building a single road - just as we are already seeing companies like Airbnb transforming the approach to accommodation without building a single hotel. They don't own any buildings at all, they write code, but they've changed the way the fabric of the city is working. Uber doesn't own any cars, but they're changing the nature of mobility."

The mobility revolution is already happening, according to Hill, and can only accelerate. He believes Hietanen's notion of mobility service providers is likely to become a reality, and agrees with Bayley's contention that the era of the car is nearly over. "The idea that we use privately owned cars to shift the massive bulk of people around a city seems utterly absurd to me. What a crazy thing to do."

But what's the timescale? Hill offers a qualified answer. "It depends on the city. Cities like Helsinki, Copenhagen, Zurich, those small cores with a 2 million exterior [population]; in the next five years I think we'll be seeing really coherent mobility-as-service offers. They're already halfway there - they've got Zipcar and Uber, really good public transport systems, are very walkable and bikeable, and have a strong public policy on carbon emissions and making a safer city. So I can't see why in five years we wouldn't have reached a significant transition point."

Those, though, are the easy ones. "With somewhere like London, which is 15 Copenhagens in size, it's really difficult to say. It depends on the decisions that Transport for London makes, and on manufacturers like Ford and BMW extending their mobility experiments. Then with cities like Sydney and San Diego, you are maybe talking 20 or 30 years before you get significant modal shift from private car ownership.

"Once you've built all those highways and car parks, it takes a lot of money and time to unpick them. They placed a big bet on cars in the late-1950s, and it's a long time before you get a chance to make another bet. A city like London, which is a couple of thousand years old and contains many different histories, ends up with a tapestry of multiple side-bets rather than one overweening vision. That's actually more interesting and more malleable."

What is evident is that the cities of tomorrow are likely, in effect, to revert to the cities of yesterday:

denser, more neighbourhood-based, with everything you need for work and leisure in one district. There will be less separation of functions, less commuting, less travel generally.

"To me, this last 50 or 60 years feels like an anomaly," says Hill. "If you haven't already guessed, I'm a non-driver. I think we will look back on this time and say, 'Wasn't it odd that we drove ourselves around?' In the 1920s and 30s, you'd have gone to the butcher on your high street, and a grocery boy (it would have been a boy then) would have delivered the goods to your home on a bike - and they'd have been there by the time you got back."

In Hill's view, that age and those services will return. Neighbourhoods and self-sufficient communities will make a comeback in a new era that will be dominated not by the car, but by the smartphone and the network. The commuter is dead. Long live the hipster.

Are we seeing the decline of the car in cities? Share your thoughts in the comments below

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COMMONWEALTH OF MASSACHUSETTS
THE GENERAL COURT
STATE HOUSE, BOSTON 02133-1053

June 5, 2015

Central Massachusetts Metropolitan Planning Organization
2 Washington Square – Union Station
Worcester, MA 01604

To Whom It May Concern:

In response to the recent decision by the Central Metropolitan Planning Organization to not include the Charlton Oxford Route 20 Reconstruction Project (602659) their Regional Transportation Plan, we would like to take this time to urge you to reconsider the importance of this project. Without a funding source the Massachusetts Department of Transportation cannot continue to work on the design for this project, subsequently ending this project.

The section of Route 20 that passes through Charlton and Oxford is a major transportation route that works as an alternative to the Massachusetts Turnpike and connector to I-84. There are also multiple businesses along the route and immense opportunity for continued economic development. More importantly, Rt. 20 has had many safety issues in past years and this is in large part due to the current make-up of this major roadway. As you can imagine, this leads commuters to seek alternate routes which in turn causes heavy traffic concerns and the potential for even more accidents. The original proposal of widening of shoulders and driving lanes cannot be overlooked as the number of accidents has continued to rise. This completion of this project is important to the safety of not only our constituents, but all citizens of the Commonwealth that use this major artery.

Thank you for taking the time to review this matter. We would like to request a timely response and that both of our office be copied on any correspondence with the Towns.

Sincerely,

Anne M. Gobi
State Senator

Ryan C. Fattman
State Senator

CC:
Robin Craver, Charlton Town Administrator
Brian Palaia, Oxford Town Manager
Arthur Frost, District 3 Project Development Engineer, MassDOT

THE GENERAL COURT OF MASSACHUSETTS
STATE HOUSE, BOSTON 02133-1053

June 17, 2015

Secretary Stephanie Pollack
Massachusetts Department of Transportation
Ten Park Plaza
Boston, MA

Re: Removal of I-90/I-495 and I-495/Route 9 Interchange Projects from Central MA MPO Long Range Transportation Plan

Dear Secretary Pollack:

It has come to our attention that the Central Massachusetts Metropolitan Planning Organization (CMMPO) has been directed to remove the I-90/I-495 and I-495/Rte. 9 Interchange Improvement Projects from their Long Range Transportation Plan (RTP), *Mobility 2040.* We are writing to express our opposition to the removal of these projects given the safety and congestion needs at these interchanges and our desire to support continued economic growth in our region.

We understand that the I-90/I-495 interchange project is no longer included because it was to be funded using toll revenues that may no longer be available. In light of MassDOT's significant proposed investment in All Electronic Tolling (AET), we would request that the project be retained in the Long Range Plan until there is more clarity around the availability of future toll revenues. We further believe that given the traffic changes that will result from the move to AET, the I-90/I-495 Interchange Improvements will become more urgent than ever.

With AET slated to go live in the Summer/Fall of 2016, and given that MassDOT has identified this interchange as one of the most challenging Legacy Plazas to redesign, we urge you to reconsider the Project's inclusion in the CMMPO RTP. This interchange already has inherent issues related to congestion, safety, and environmental constraints, all of which will be exacerbated by the demolition and redesign of the plaza. However, even without the move to AET, a redesign of this interchange has been a regional transportation priority for several years. For these reasons as well as the economic impacts due to traffic projections for one of the Commonwealth's busiest interchanges, we are very concerned by the Project's exclusion from the RTP.

In addition to the I-90/I-495 Project, we are also concerned about the removal the I-495/Rte 9 Interchange Project. The decision to remove projects like this one, which require statewide funding, is a departure from past practice and may have significant consequences for an MPO like Central Massachusetts whose budget is already limited relative to the need. We fear that this

new policy will make it more difficult to address larger scale regional projects like the I-495/Rte 9 interchange that are essential to the long-term interests of the area.

Further, we would like to express concern about the lack of sufficient notice prior to removal of these projects, only a week in advance of the MPO's vote on the final slate of projects.

We appreciate your consideration of our request to reconsider the prioritization of the I-90/I-495 and I-495/Rte 9 Interchange Projects on the CMMPO RTP and look forward to your response. We also look forward to partnering with you as we work to address infrastructure priorities like these that directly affect the MetroWest region and its economic future.

Sincerely,

Rep. Carolyn C. Dykema
8th Middlesex District

Sen. James B. Eldridge
Middlesex & Worcester District

Rep. Danielle Gregoire
4th Middlesex District

Rep. Chris Walsh
6th Middlesex District

Rep. Hannah E. Kane
11th Worcester District

Rep. David Linsky
5th Middlesex District

Rep. Kate Hogan
3rd Middlesex District

The Commonwealth of Massachusetts
House of Representatives
State House, Boston 02133-1050

PAUL K. FROST
STATE REPRESENTATIVE
ASSISTANT MINORITY WHIP

7TH WORCESTER DISTRICT
AUBURN, CHARLTON,
MILLBURY AND OXFORD

ROOM 542, STATE HOUSE
TEL. (617) 722-2489
FAX (617) 722-2376
Paul.Frost@MAhouse.gov

Mary Ellen Blunt, Program Manager
Central Massachusetts Metropolitan Planning Organization
2 Washington Square – Union Station
Worcester, MA 01604

June 9, 2015

Dear Ms. Blunt:

We are writing you today to express our concern over the funding for the reconstruction of the Charlton Oxford Route 20 Reconstruction Project 602659. As legislators representing Charlton and Oxford, it is vital to obtain funding for the completion of this project as a matter of public safety for these two towns as well as those commuters utilizing Route 20 on their daily travels.

Having been carried for many years on the Central Massachusetts Metropolitan Planning Organization's (CMMPO) Long Range Plan (LRP), the Route 20 Reconstruction Project should remain a priority for the CMMPO and MassDOT. MassDOT has already invested countless hours and funds in the design of the project which is over 25% complete. Leaving an unfinished project on such a prevalent road is dangerous to those who rely on that road. It is also fiscally irresponsible to not follow through after time, energy and funds have been spent for this important project already.

The road requires repairs and a new design to facilitate traffic flow both at the local and statewide levels. As a statewide transportation route, traffic is redirected from the Massachusetts Turnpike during severe snowstorms, heavy traffic flow, or motor vehicle accidents. Route 20 also has school bus stops on it even during higher traffic volumes due to problems with Route 90.

Over two decades ago, a massive project was undertaken to make Route 20 safer and this is the final phase which should not be abandoned now. It has long been understood by community leaders in both towns as well as the state legislative delegation from the area that this final phase would be addressed and completed. A departure from this longstanding plan is of great concern that promises made are now promises not kept. This will also cause distrust on any future promises the state and/or CMMPO make in the future.

Bearing in mind all of the aforementioned safety issues and ramifications of the cancellation of this project, as well as the longstanding promises made to both communities it will get done, we are respectfully asking that you reconsider your vote to cancel this project. Allow the final phase of the public safety improvements to be completed on Route 20 in Charlton and Oxford. There is an obligation to these two communities and all those who travel on this roadway to follow through and make this section of Route 20 safer and make good on the promises made by your organization and the state.

Thank you for your attention to this matter. Please do not hesitate to contact our offices with any additional questions or concerns.

Sincerely,

Paul K. Frost
State Representative

Peter J. Durant
State Representative

Joseph D. McKenna
State Representative

Town of Oxford
Board of Selectmen
Memorial Hall - 325 Main Street
Oxford, Massachusetts 01540-1797

Dennis E. Lamarche, Chairman
Michael Voas, Vice Chairman
Jarred J. Mahota, Secretary
Alan R. Berthiaume
John G. Saad

Karen A. Crandell,
Administrative Assistant
Phone (508) 987-6027
Fax (508) 987-6248
Email: kcrandell@town.oxford.ma.us

June 2, 2015

Central Massachusetts Metropolitan Planning Organization
C/O Central Massachusetts Regional Planning Commission (CMRPC)
2 Washington Square
Union Station
Worcester, MA 01610

RE: Route 20 Reconstruction (602659)

Dear Commissioners:

Recently, the Town of Oxford became aware that the Route 20 Corridor Improvement Project was proposed by the Metropolitan Planning Organization (MPO) to be removed from the region's Transportation Improvement Plan (TIP). It is our understanding that concerns have been raised about the cost of the project compared with the amount of funding allocation that can be received in a program year to fund this important project. We on the Board of Selectmen understand that if this project went forward other project needs would not be addressed, because of the high cost of construction; nevertheless, we know that the public safety concerns along this corridor are paramount.

Over the years, there have been many head on vehicular collisions and fatalities along this corridor of Route 20 in Oxford and Charlton. Going forward with the reconstruction project would provide an opportunity to address the needed safety improvements to avoid further serious and fatal collisions.

In addition to safety improvements, the project would also address the transportation network. The road is not currently designed to handle the level of traffic that it does and it also becomes an alternative route when there is accident on I-90. For instance, last year there was an accident on Route 20 that caused a 43-mile traffic back-up to Boston, which took 3 hours to manage and took 10 hours for traffic to return to normal. Improving the capacity of this corridor will address some of these constraints and improve the economy.

This project is also an opportunity for economic development along the corridor. During the reconstruction of the corridor, the Town of Oxford would likely extend sewer in coordination with the reconstruction contract. As you know, sewer is essential for serious economic development to occur and the further development of this corridor's economy is good for the quality of the life in the Town and this region.

We know you have said you would consider putting this project back on the list if the MassDOT was willing to make a larger commitment to fund the project. However, we know the political reality of situations like this is that the project will never get put back on the list. If the project is delayed or removed from the list and reconsidered to be put back later, the project will be exponentially more expensive and that will prevent it from ever going back on the Transportation Improvement Plan. Please do not fail to address public safety, because of unknowns about MassDOT's future funding priorities.

Thank you for your reconsideration of this important matter.

Very truly yours,

OXFORD BOARD OF SELECTMEN

_____ Chairman

_____ Vice Chairman

_____ Secretary

_____
Brian M. Palaia, Town Manager

BP/kc

TOWN OF WESTBOROUGH
MASSACHUSETTS

BIRTHPLACE OF ELI WHITNEY

BOARD OF SELECTMEN

TOWN HALL
34 WEST MAIN STREET
WESTBOROUGH, MA 01581-1998
TEL. (508) 366-3030

June 16, 2015

Ms. Stephanie Pollack
Secretary of Transportation
10 Park Plaza, Suite 3170
State Transportation Building
Boston, MA 02116

Re: Potential Reconsideration of the Major Infrastructure Projects on Current TIP

Dear Secretary Pollack:

Westborough has recently learned that Mass DOT has given the CMMPO a new list of priorities for its Major Infrastructure Project Options for Mobility 2040. The new Options, dated June 10, 2015 removes the I-495/I-90 Interchange from the TIP funding list and reduces the I-495/Rte 9 Interchange Improvements to a lower priority than has been promised to the Central Massachusetts MPO. These reconsiderations present great concerns to the Town of Westborough and potentially jeopardize the transportation infrastructure and regional economy in what has been a recent bright spot for the Commonwealth.

The 495/Rte9 Interchange brings thousands of employees to their jobs in Central Massachusetts daily. The Towns of Westborough, Southborough, Northborough, Marlborough and Hopkinton directly are served by this major transportation hub. The location is at the heart of the Commonwealth. Central Massachusetts has emerged as a major employment center for new businesses and continues to provide expansion opportunities for its existing companies. Commuters travel both north and south on I-495 to the office parks in Marlborough and Hopkinton as well as east and west along Rte 9 to their offices in Southborough, Westborough and Northborough using this vital interchange. Over the years, the level of service provided by the Interstate at its intersection with Rte 9 continues to worsen presenting a problem for employers as their workers experience longer delays to and from their offices.

Since 2011, the Westborough business community alone has grown by more than 5,000 jobs, according to data compiled by the Westborough Economic Development Committee. Neighboring Towns have also experienced significant economic growth during this time period. Access to the region provided by the Interchange is a major factor for businesses choosing to

grow in Central Massachusetts. Currently, the I-495/Rte 9 Interchange Improvements are scheduled as a 2-year TIP project during the 2021 - 2025 time interval. It is vital to the region and the Commonwealth that this project remains on the current TIP funding program as scheduled. Also, please consider reinstating the I-90/I-495 Interchange for future consideration.

We urge the Massachusetts Department of Transportation to consider our needs and concerns when finalizing your recommendations for your Major Infrastructure Project Options for Mobility 2040.

Respectfully submitted,

George Barrette, Chairman
Westborough Board of Selectmen

cc: Mr. David Mohler, Executive Director Office of Transportation Planning, Mass DOT

Scott Hamwey, Manager of Long-Rang Transportation, MassDOT

Ms. Mary Ellen Blunt, Central Mass Regional Planning Commission

Mr. Barry Lorion, District III, Mass DOT

Representative Carolyn C. Dykema

Representative Danielle W. Gregoire

Representative Hannah Kane

July 20, 2015

WalkBike Worcester
c/o Worcester Food and Active Living Policy Council
United Way of Central Massachusetts
484 Main Street, #300
Worcester, MA 01608

Ms. Mary Ellen Blunt
Transportation Program Manager
Central Massachusetts Regional Planning Commission
2 Washington Square, Union Station, 2nd floor
Worcester, MA 01604

Dear Ms. Blunt,

WalkBike Worcester respectfully submits these comments on *Mobility2040*, the Long Range Transportation Plan for the Central Mass region. We appreciate all the effort by CMMPO members and CMRPC staff on development of the draft plan.

We are pleased to see the higher profile given to pedestrian and bicycle modes in this plan versus prior LRTPs, including the 3% allocation for each mode. Yet the approach outlined represents small steps rather than a visionary commitment to a multimodal system. It increases emphasis on pedestrian and bicycle accommodation but does not make active transportation one of the central concerns of the transportation system. In fact, the term "active transportation" is not used in the plan. For our region to remain economically competitive, we have to offer better than that – a vision where active transportation modes and transit are not "alternative" but central and interwoven. Language that limited funding prevents capacity expansion leads the reader to conclude that expansion is the preferred option, when there are critical economic, social justice, human health, environmental and quality of life reasons why roadway expansion is not the best way forward. As noted in the guidebook *The Innovative MPO* by Transportation for America, decision making can "bend" existing trends on growth and development and not simply be guided by them.

Performance Management: We look forward to refinement of these measures over time. We are disappointed the region continues to place congestion reduction in such a prominent position (Goal 1). We would prefer to see Goal 2/Objective 1 separated into vehicle, bicycle and pedestrian measures. We support the Goal 4 mode share and pedestrian and bicycle network measures, but suggest the Complete Streets performance measure be set much higher. Equitable transportation performance measures under Goal 6/Objective 1 would be stronger by specifying measurement for "increase multimodal access…in 2 EJ neighborhoods in 5 years" and employing more innovative outreach methods developed by other MPOs around the country.

Transportation Linkages: We recommend these themes be incorporated into the Executive Summary, as this shorter document is often the only one the public reads. The health and transportation section could be strengthened, and we hope health outcomes will eventually

become part of the LRTP. CMRPC has been actively engaged in the City of Worcester's Mass in Motion initiative, but that program and their involvement is given only superficial treatment in the plan. Similarly, we are pleased to see language on Sustainable Transportation, Smart Growth and Livability, but the sections could be fleshed out more. The Complete Streets description is surprisingly thin given its current prominence in transportation planning. The Safe Routes to School work in Worcester is coordinated by the city's Division of Public Health under Mass in Motion funding, not by WalkBike Worcester.

Transportation Modes: We were gratified to see that pedestrian and bicycle modes were presented first in this section. We look forward to contributing to a comprehensive update of the Regional Bicycle and Pedestrian plan.

Summary of Needs and Analysis: We understand the active transportation sections are limited due to the planned update of the regional pedestrian and bicycle plan. Yet nearly half of this section is devoted to highway using structure and language that is not easy for the public to understand.

Thank you for the opportunity to comment on the region's Long Range Transportation Plan. We look forward to opportunities for involvement in plan implementation.

Sincerely,

Karin Valentine Goins
Jerry Powers
Co-chairs, WalkBike Worcester

CHAPTER II

Performance Management

This page was intentionally left blank no materials are in this section.

CHAPTER III

Transportation Linkages

Water, Sewer, Other Infrastructure

Infrastructure includes the basic support systems and services for the region, including drinking water supplies, wastewater treatment, and communications facilities. Most of these we take for granted, but there are reasons to be concerned for the future. Because Massachusetts and New England have been settled for some time, much of the supporting infrastructure is old and in need of repair or expansion to accommodate growing demand. Here in Central Massachusetts, shortfalls in drinking water supplies are projected for many communities by the end of this current planning horizon in 2040. In fact, infrastructure investments were cited by many towns as being critical to successful future development. In most cases, the limitations of drinking water and sanitary sewer systems were identified as significant impediments to achieving the full potential of identified PDAs.

Water

Drinking water in the Central Mass Region is provided and distributed through multiple sources, including large regional authorities, municipal water districts and private wells. The City of Worcester Water Supply, through its Water/Sewer Operations Division provides an average of 24 million gallons per day for both in-city use and sale to towns and water districts adjacent to Worcester. The supply system consists of 10 reservoirs located in five neighboring towns.

Two of the Region's municipalities receive various levels of water services from the Massachusetts Water Resources Authority (MWRA) with Northborough receiving partial water service and Worcester utilizing MWRA for emergencies only.

Otherwise a number of communities have municipal water districts that may serve portions of their respective communities. During the 2013 Rural-11 Prioritization Plan, it was learned that, for example, five (5) of the 11 municipalities in that sub-region have public water supplies. These public water supplies are typically limited to the village centers and do not service the entire community. Four (4) communities in the region are dependent largely on private water supplies. Outside these areas, residents and businesses must rely on individual private wells.

In November 2013, a $500 million comprehensive water infrastructure and drinking water bill was introduced, which proposed reforms and commitments to assist small communities and enhance state water and wastewater infrastructure challenges and to promote innovative water management pilot projects as well as green infrastructure projects.[1] On August 6, 2014 the

[1] https://malegislature.gov/Bills/188/Senate/S1947

previous governor's administration signed into law Chapter 259 of the Acts of 2014 – An Act improving drinking water and waste water infrastructure.[2]

Water withdrawals are regulated by the Massachusetts Department of Environmental Protection (DEP) under the authority of the Water Management Act (WMA). Thus, new or increased municipal water supplies require permits and the reporting of water use data to DEP. Overall, population and employment growth projections will put increasing pressure on local water systems. There are a number of communities in the CMRPC region that are projected to exceed their authorized WMA volumes.

Wastewater

The largest centralized, public wastewater system in the Region is the Upper Blackstone Wastewater Treatment Plant, more formally known as the Upper Blackstone Water Pollution Abatement District. The District provides wastewater service to portions of eleven (11) communities, which includes City of Worcester and most of the surrounding communities.

Other Blackstone River Valley communities may have a municipal district sewer system that will cover only a portion of the town, or have no public sewer system at all (e.g. Mendon and Millville). Most Rural-11 towns have either limited municipal district sewer, which may cover only a portion, often very small, of the town, or have no public sewer system at all. Five (5) of the Rural-11 communities are almost entirely reliant on private septic systems for wastewater.

A lack of public sanitary sewer constrains development since the cost of designing, constructing and maintaining an on-site facility for a large-scale development significantly impacts a development pro-forma, and may make site development cost-prohibitive. However, large scale regional systems are not always the best or most cost-effective solutions. Decentralized treatment facilities may offer unique solutions to development within designated PDAs. Conversely, regional sewer extensions can facilitate sprawl development which would require the costly upgrading and extension of transportation facilities. Therefore, expansion of development enabling utilities should always be done carefully and strategically noting how it may unexpectedly influence cost burdens in other areas. The decentralized treatment approach, however, could assist in economic development opportunities in town and village centers and also bring economies of scale to provide transit services to these areas.

While many communities have some existence of wastewater infrastructure, sewer lines are generally restricted to small areas of the communities. In addition to denser town centers, water and sewer lines often follow along major roadways. Communities can use such infrastructure, in conjunction with the transportation system, to direct and plan for future growth. Water and

[2]https://malegislature.gov/Laws/SessionLaws/Acts/2014/Chapter259

wastewater infrastructure is often critical to land development, both residential and non-residential, and its absence can be used to deter development where it is not desired.

Ideally there should be more coordination of roadway construction work with utility installation. Capital improvement plans within each community could be reviewed with the Transportation Improvement Program as part of identifying all potential opportunities for such coordination. Such an initiative would help leverage federal dollars more effectively and prevent waste. Improvements in water, sewer and transportation infrastructure can foster economic development opportunities in the region's town and village centers for example.

Figures II-2 and II-3 show water and sewer infrastructure, respectively, based on available GIS mapping data as of the preparation of Mobility2040, the 2016 Central Massachusetts region's Long Range Transportation Plan (LRTP). CMRPC does not possess water and sewer GIS data from the City of Worcester, but as previously indicated there are water and sewer infrastructure covering much of the built-up areas in the city. A portion of the city along Southwest Cutoff (Route 20) has not been sewered, but in 2014 Worcester received a grant to help address this gap in sewer availability.

Broadband

Broadband communications for the high speed transfer of voice and data is available in most of the region, however, some communities in the north and west edges of the region are either underserved or not served by this basic technology, a fact that was highlighted in the Rural-11 Prioritization Project.

In this era, access to reliable information technology is tremendously important. The Massachusetts Rural Access Commission Report discussed the need to expand broadband access to rural communities and service providers as a much needed area of improvement in Massachusetts. Ten (10) of the Rural-11 communities) all have the need for improvements to information technology. Improved access to reliable Information Technology (IT) would promote the following:

- Improved economic development
- Increase marketing for local small businesses to use internet for planning, compliance, research, and marketing
- Increase of work at home option, thus reducing auto travel to services, shopping, and even employment
- Improved quality of life
- Online education
- Employment networking

- Improved access to local, state, and federal government online services.
- Increase integration with transit and traffic management / information systems to promote mode shift, reduce travel times and reduce congestion.

The Mass Broadband 123 project consists of installing over 1,200 miles of fiber optic line to connect over 120 unserved and underserved communities in western and north central Massachusetts. The Mass Broadband Initiative (MBI) is working to extend affordable high-speed Internet access to all homes, businesses, schools, libraries, medical facilities, government offices and other public places across the Commonwealth. The MBI and Mass Broadband 123 projects have been helping to bring fiber service into rural areas, with a focus of providing broadband service to what are known as “Community Anchor Institutions”. The "Last Mile" is a broadband network term that describes the network infrastructure closest to the end-users, the residents, businesses and community facilities. The MBI is providing fiber optic service to the all of the Rural-11 Community Anchor Institutions (CAIs), except North Brookfield, Oakham, and Rutland. The next phase of implementation will be to extend high-speed broadband service to the Last Mile of each community’s residents, businesses and other end users beyond the CAIs.

Cellular phone coverage was also highlighted as a need by communities in the Rural-11 Region. Large areas still have poor service and frequent dropped calls. At least seven (7) different carriers provide cell phone service in the Rural-11 Region. But the best service is limited to the southern and eastern sections of the region. Outside of the Rural-11, communications infrastructure is more adequate, especially closer to the Worcester area and within the I-495 communities.

Housing

Until the 2008 economic downturn, housing construction in the region continued at a brisk pace. Most housing analysts believe the causes of this relatively healthy market are the lower cost of housing in the region compared to the Boston and MetroWest markets to the east, and the availability of a still abundant supply of land. The region’s central location and excellent highway access make it possible for workers with jobs in Boston or along I-495 to live within driving distance of work while owning a less expensive home and enjoying a rural or suburban life style.

Though the housing market has made general strides toward recovery across the state, “home prices are appreciating in some communities and stagnating in others [in Central

Massachusetts]. Distressed properties are still piled up in some places and dwindling elsewhere."[3]

Though housing is less expensive than housing to the east, it is not necessarily considered affordable to many. As noted in the previous land use figures, much of the region's housing stock is single-family, with the exception of Worcester. In addition, the region struggles to meet the Chapter 40B Subsidized Housing Inventory (SHI) goal of 10% in each community. The region as a whole has 7.7% of its housing stock on the SHI. Without the City of Worcester, which contributes over half of those units, the region has only 5.1% of its units on the SHI. As of April 30, 2013, only Northborough and the City of Worcester met the 10% goal, at 11.4 % and 12.8%, respectively. The majority of CMRPC communities (27) have an SHI of 5% or less.

The rate of development has slowly, but steadily increased, with the improving housing market. In 2011, the region saw 570 housing permits issued, 509 (90%) for single family housing units. In 2012, the region saw 795 housing permits issued, 580 (73%) for single family units. In addition, the median rent for the region was $893[4] while the 2013 median sales price for a single family home[5] was $237,625. The vacancy rate for the region's housing is 5.8%.

Water Resources

The major issues related to water resources in the state of Massachusetts are water quantity, quality and loss of habitat.[6] All of these issues could be related to impacts from transportation projects, specifically polluted run-off from impervious surfaces, like roads, parking lots and other paved surfaces. In rural areas the impacts are exacerbated due to agricultural activities (fertilizers, manure, erosion, etc) and residential uses (septic tanks, common fertilizers). Concentration of contaminants in runoff can be traced to exhaust emissions from gasoline engines (phosphorous, nitrogen), road wear, atmospheric deposition (acid rain with ammonia, nitrates, magnesium, sulfates) local and berm soils, and highway maintenance materials. Precipitation (rain, sleet or snow) events wash pollutants and sediments from impervious surfaces, which are carried by small streams and deposited in waterbodies or aquifers. Aquatic habitats can also be diminished and critically impacted by the amount of sediment carried in the

[3] Central Mass. Housing has yet to feel recovery, Lisa Becker, Worcester Telegram and Gazette, June 22, 2014
[4] Source: American Fact Finder, 2014
[5] Source: The Warren Group, 2014
[6] Source: Executive Office of Environmental Affairs. Massachusetts Water Policy. 2004. Retrieved at: http://www.mass.gov/eea/docs/eea/water/waterpolicy-2004.pdf

run-off, which is related with water turbidity levels, or changes in water temperature, particularly on cold water fish.

The water basins or watersheds are the catchment area of a river, lake, estuary, reservoir, wetland, sea or the ocean. All surface waters in Massachusetts can be assigned to a river basin or watershed. There are 28 watersheds in Massachusetts (See Figure III-2), including the Atlantic Ocean. Of these, six (whole or segments) are located in the Central Massachusetts Region. These basins are: Nashua River Basin (North), Concord River Basin (East), French River Basin (South), Blackstone River Basin (South-East), Chicopee River Basin (West) and the Quinebaug River Basin (South-West). All these basins are part of larger watersheds or hydrological units, as identified by the U.S. Geological Survey. These basins are: the Merrimack River Basin, the Coastal Basin, the Thames River Basin, and the Connecticut River Basin.

There are three Watershed Management Areas (WMA) in the Central Massachusetts region.

- Muddy Brook WMA in Hardwick
- Quaboag WMA in Brookfield, East Brookfield, West Brookfield, Warren, and Sturbridge
- Breakneck Brook WMA in Southbridge, Sturbridge.

Transportation can have a great impact in overall watershed water quality. A small impact on headwaters or smaller streams can grow in magnitude affecting hundreds of miles downstream to the ocean in the New England region.

The Central Massachusetts region is vastly covered by lakes and ponds. Some of them are manmade, primarily for water supply, but they also have a great scenic value and provide recreational opportunities. Lakes are important habitats and food resource for aquatic life and wildlife. Nonetheless, lake ecosystems are very fragile. Eutrophication or oxygen depletion is the most common environmental problem found in lakes. Heavy rains and intense run-off transport polluted sediments and nutrients, which increase the probability of eutrophication. The recreational and aesthetical values of the lake and its landscape are affected as well; but most importantly, the water supply is compromised.

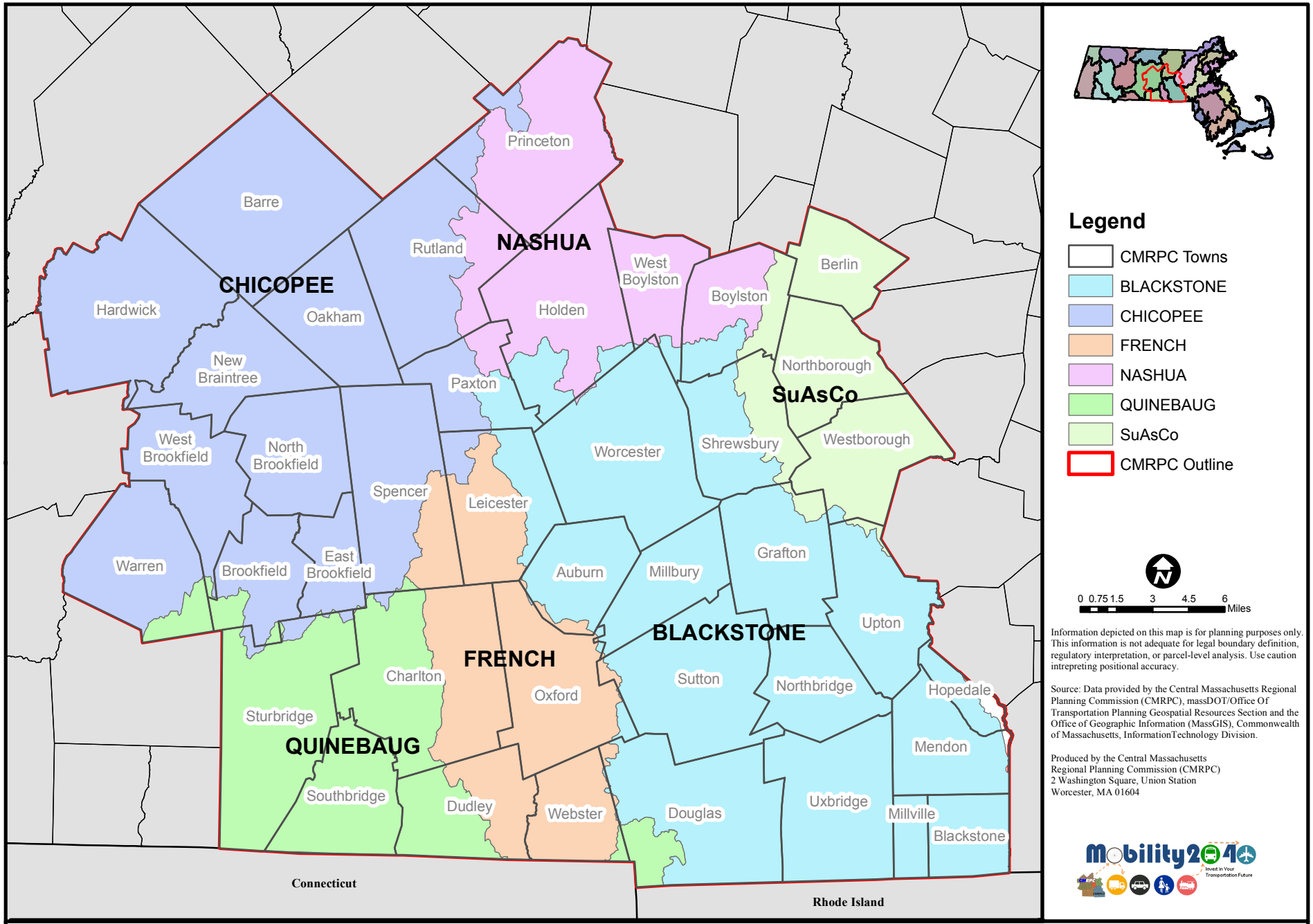


Figure III-2: Central Massachusetts Watersheds

Table III-2: Major Rivers in the CMMPO region

Assabet River (Northbrough)	Burnshirt River (Barre)
Cranberry River (Spencer)	East Branch Ware River (Barre, Rutland, Princeton)
Five-Mile River (North Brookfield, Oakham)	French River (Oxford, Webster)
Little River (Oxford, Charlton)	Mill River (Hopedale, Mendon, Blackstone),
Mumford River (Northbridge, Uxbridge, Douglas)	Prince River (Barre)
Quaboag River (Brookfield, West Brookfield, Warren)	Quinapoxet River (Holden, West Boylston),
Quinebaug River (Dudley, Southbridge, Sturbridge)	Quinsigamond River (Grafton)
Seven-Mile River (Spencer, East Brookfield)	South Fork River (Charlton)
Sudbury River (Westborough)	Ware River (Hardwick, Barre)
West River (Upton, Northbridge, Uxbridge)	Blackstone River (Worcester, Millbury, Sutton, Grafton, Northbridge, Uxbridge, Millville and Blackstone)

Reservoirs are the major supply of drinking water for the Massachusetts population. Care must be taken to avoid adverse environmental effects close to reservoirs with drinking water supplies. Major reservoirs in the region include the Wachusett Reservoir, built in 1897 in response to population growth in the Boston Metropolitan Area and it has a capacity of 65 billion gallons; and the Quabbin Reservoir, completed on 1946 and located on the central region's western fringe, is the largest man-made reservoir in the world (412 billion gallons) devoted solely to water supply. [7]

As mentioned before in the Land Use section, the Central Massachusetts region exhibits a great diversity in relation to water supply. Some towns have municipal water districts with public water suppliers, others have private suppliers, and there are also communities who rely on

[7] Source: Massachusetts Water Resources Authority. Metropolitan Boston's Water System History. Retrieved at: http://www.mwra.state.ma.us/04water/html/hist1.htm

individual private wells. Data from MassDEP[8] for the Central Massachusetts region shows groundwater withdrawal varies from 0-3% in towns like Holden and Rutland, to more than 50% in towns like Grafton, Worcester, and Shrewsbury, posing a great pressure on this resource. The overuse of an aquifer can deplete a waterbody given the intricate relationship between surface waters and ground waters. Also, if contaminated water infiltrates an aquifer, its quality will decline. The major concern of groundwater contamination in northern states is road salt used to melt ice.[9] De-icing practices can promote the excess of sodium and chloride in waterbodies, specifically groundwater.

Addressing water quality of streams, rivers and lakes is a concerted effort between federal and state agencies, local governments and community partners. Major efforts have been done by the state in compliance with the federal Clean Water Act (CWA) which requires that each state must monitor the quality of its surface waters, assess their capacity to support designated uses and to identify, if possible, causes or sources of impairment. In this regard, MassDEP issued the 2012 Integrated List of Waters (305(b)/303(d)). The Integrated List of Waters categorizes the status of the assessed waters from 1 to 5, 5 being impaired for one or more uses thus requiring a Total Maximum Daily Load (TMDL)[10] to restore water quality and attain designated uses and final approval from the Environmental Protection Agency (EPA). In the region, based on MassGIS "Major Ponds and Major Streams" datalayer, 218 major waterbodies are included in the 2012 Integrated List of Waters, 28 of which are category 5, thus requiring a TMDL (See Figure III-3).

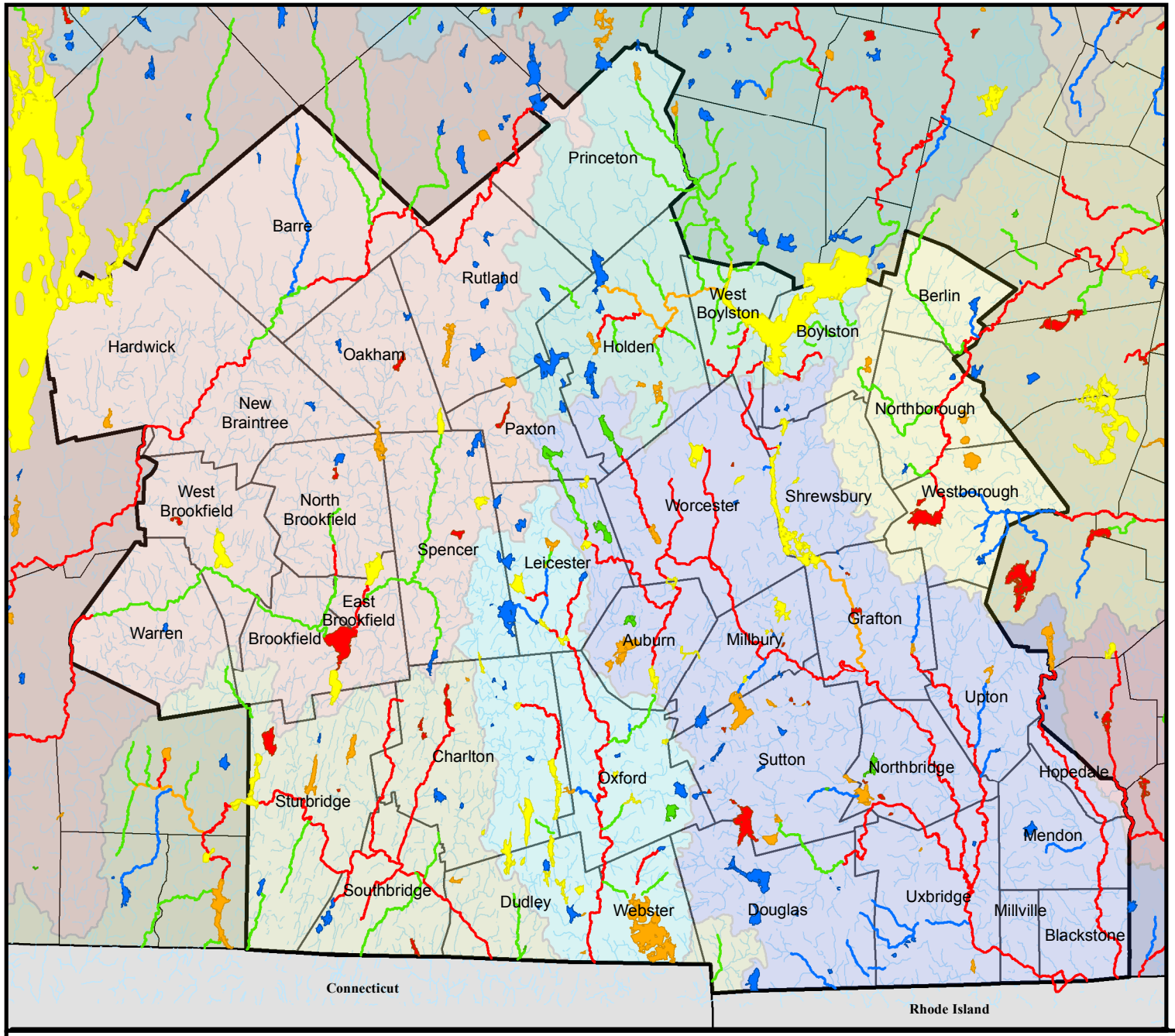
MassDOT administers the Impaired Waters Program within the agency in compliance with federal and state stormwater regulations. MassDOT has a 5-year plan to perform statewide assessments on all waterbodies located on DOT properties, with special attention to those that discharge stormwater runoff to impaired waters. For this purpose MassDOT started a retrofit program with project-specific best management practices (BMPs). MassDOT submits assessments to EPA which are then summarized in the National Pollutant Discharge Elimination System (NPDES) permit annual reports.

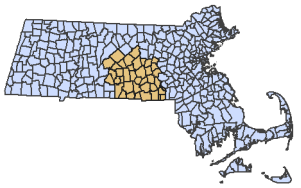
In addition, MassDOT has formalized the Stormwater Management Plan process by requiring the completion of the Water Quality Data Form (WQDF) for all STIP transportation projects as part of the Early Environmental Coordination Checklist deliverable at the 25% design stage process.

[8] MassDEP. Sustainable Water Management Initiative (SWMI) Interactive Map. November 2012. Retrieved at: http://209.80.128.252/flexviewers/SWMI_Viewer/index.html

[9] Source: U.S. Geological Survey. Groundwater Quality. Retrieved at: http://ga.water.usgs.gov/edu/earthgwquality.html

[10] A Total Maximum Daily Load (TMDL) is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards. http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/





Legend

Water Body Segments - Rivers

Category

- 2 - Attaining some uses; other uses not assessed
- 3 - No uses assessed
- 4A - TMDL is completed
- 4C - Impairment not caused by a pollutant
- 5 - Waters requiring a TMDL

Water Body Segments - Lakes, Estuaries

Category

- 2 - Attaining some uses; other uses not assessed
- 3 - No uses assessed
- 4A - TMDL is completed
- 4C - Impairment not caused by a pollutant
- 5 - Waters requiring a TMDL
- CMRPC Outline
- Rivers and Streams
- CMRPCTowns

0 0.75 1.5 3 4.5 6 Miles

Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution intrepreting positional accuracy.

Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT/Office Of Transportation Planning Geospatial Resources Section and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, InformationTechnology Division.

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Figure III-3: 2012 Integrated List of Waters in the CMMPO Region

At this stage, MassDOT alerts the designer of those environmental impacts that need to be addressed and the requirements for BMPs based on waterbody status. Further in the process, by the 75% design stage, the designer is required to fill the form again and include the BMPs used that will address the needs identified earlier in the process. MassDOT keeps track of the efforts made for future water quality assessments in the project's area.

Wetlands and Vernal Pools

Wetlands are areas where water is present either at or near the surface of the soil all year or for varying periods of time during the year. Under the Clean Water Act, the term wetlands means "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Wetlands generally include swamps, marshes, bogs and similar areas and typically act as headwaters for smaller streams.

Local Conservation Commissions are the primary administrators and permitting authority enforcing the Wetlands Protection Act (Chapter 131 sec. 40). At the state level, MassDEP Wetlands Program ensures the protection of Massachusetts' inland and coastal wetlands, tidelands, great ponds, rivers and floodplains by administering and enforcing the Wetlands Protection Act (Chapter 131 sec. 40), the Inland and Coastal Wetlands Restrictions Acts, and the 401 Water Quality Certification Program. The Wetlands Protection Act preserves wetlands with flood control measures to prevent pollution and storm damage to groundwater supplies, fisheries, shellfish, and other wildlife habitat. The Bureau of Resource Protection (BRP) requires a careful review of proposed work that may impact wetlands. Based on MassGIS wetlands datalayer, 52.79% of total wetland areas in the region are wooded swamps, 17.14% shrub swamps, 10.43% deep marsh, 10.18% shallow marsh meadow, 8.73% open waters and 0.73% bogs. Large wetlands in the CMMPO region regulated by MassDEP are located in Rutland, Charlton and Barre.

MassDOT has a Wetlands and Water Resources Unit to ensure all transportation projects scheduled for construction receive the applicable federal and state wetland permits prior to advertising for construction bids. Moreover, the unit regularly conducts early environmental coordination meetings with federal and local agencies to review projects in early planning stages.

Vernal pools are also protected under the Wetlands Protection Act. Some vernal pools are certified by the Natural Heritage & Endangered Species Program (NHESP). Vernal pools are a confined basin depression that holds water for a minimum of two continuous months during the

spring and/or summer. Vernal pools are essential for wildlife micro-habitats breeding of rare aquatic plants and small animals, such as salamander, frogs, beetles and fairy shrimp. There are an estimated 4,000 vernal pools scattered throughout the region, over 580 of which are certified. The towns of Hardwick (>90), Douglas (>40), Sturbridge (>50), Upton (>30) and Westborough (>50) have the largest number of Certified Vernal Pools in the region. The CMMPO relies on MassGIS official certified vernal pools maps and maps based on information provided, managed and updated by NHESP depicting potential vernal pools in the region.

Flood-Hazard Areas

The Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) depicts the region's flood prone areas (See Figure III-4). FIRM maps are the basis for floodplain management, mitigation, and insurance activities for the National Flood insurance Program (NFIP). The maps include FEMA flood hazard areas labeled as zones. FEMA zone designations are as follows: Special Flood Hazard Areas (SFHA), referred as the 1-percent annual chance flood, base flood or 100-year flood (zones A, AE, AH, AO, A1-A30, A99, AR); Moderate flood hazard areas, or the 0.2-percent annual chance flood or 500-year flood (zones B or X); and the areas of minimal flood hazard that are outside of SFHA and higher than the elevation of the 0.2-percent annual chance flood (zone C or X (unshaded area in FEMA's FIRM official maps).

Geology, Soils and Topography

MassGIS has a statewide surficial geology datalayer based on the U.S. Geological Survey 1:250,000 map sheets. The map show three geologic types are primarily found in the CMMPO region: sand and gravel deposits (19.1%), till or bedrock (79.4%) and floodplain alluvium (1.4%). In terms of topography, slopes in the region range from 0 to 25-35%, with the higher altitudes primarily in the western part of the region.

Forests and Vegetation

The natural environment in the region is largely intact especially in rural communities situated on the outskirts of the region, but communities along the interstate highways are densely populated with fragmented land uses. State forests, parks, and Wildlife Management Areas (WMAs), as well as municipal, and private non-profit conservation areas are spread across the region. The protected areas include the following: Upton State Forest, Rutland State Park, Oakham State Forest and Wildlife Management Area, Mine Brook Wildlife Management Area in Webster, the Douglas State Forest in Douglas, Moore State Park in Paxton, Quaboag WMA in the Brookfields, Burncoat Pond Wildlife Sanctuary, in Spencer, Wells State Park in Sturbridge, Sutton State Forest (including Purgatory Chasm), Trout Brook Conservation Area in Holden, and

Mount Wachusett Reservoir Princeton. There's only one Wildlife Conservation Easements (WCE) in the region: Leadmine Mountain WCE in Sturbridge.

DCR assists MassGIS with the maintenance of a data layer depicting open space that is protected in perpetuity. In the CMMPO region, these include watershed protection areas, wildlife management areas, state parks, and in some cases agricultural lands where a preservation restriction has been applied. Large tracts of land designated to remain in the natural state where development or roadway construction is precluded include: Ware River Watershed and Raccoon Hill WMA, both located in Barre, and various DCR lands in Millbury, Paxton and West Boylston.

Fisheries and Wildlife

Fragmentation of wildlife corridors which allow animals to move and migrate in their natural habitat can be mitigated by promoting connectivity in natural areas. Innovative roadway solutions which allow wildlife corridors under or over roads, bridges and culverts can provide safe crossing points for both small and large animals like salamander and deer. MassDOT partnered with the Massachusetts Division of Fisheries and Wildlife and UMass and launched the Linking Landscapes initiative to cost-effectively evaluate state wildlife transportation issues, prioritize mitigation opportunities, integrate wildlife upgrades into transportation infrastructure, improve highway right-of-ways for wildlife and foster environmental stewardship.[11] The partnership identified three major functional areas: reduction of turtle roadkill, mapping amphibian crossings and mapping wildlife roadkills.

The Division of Ecological Restoration within the Department of Fish and Game formed a partnership between the Massachusetts Riverways Program, The Nature Conservancy and the University of Massachusetts at Amherst. The partnership works on river and stream continuity pilot projects collecting data that is useful for assessing stream crossings and risk of culvert failure. Through the environmental consultation process, CMMPO staff received formal presentations about stream crossings, water ecosystems, protection and restoration of river and stream continuity, and climate change adaptation. As an example, the Blackstone River, the largest river in the region, has 30 crossings with Massachusetts State Roads 16, 122, 122A and 146, I-90, the Southwest Cutoff in U.S. 20, access ramps and local streets. The Blackstone River Basin includes 188 lakes in Massachusetts and cover approximately 7,087 acres.[12]

[11] http://www.linkinglandscapes.info/
[12] MassDEP (2010). Blackstone River Watershed 2003-2007 Water Quality Assessment Report.

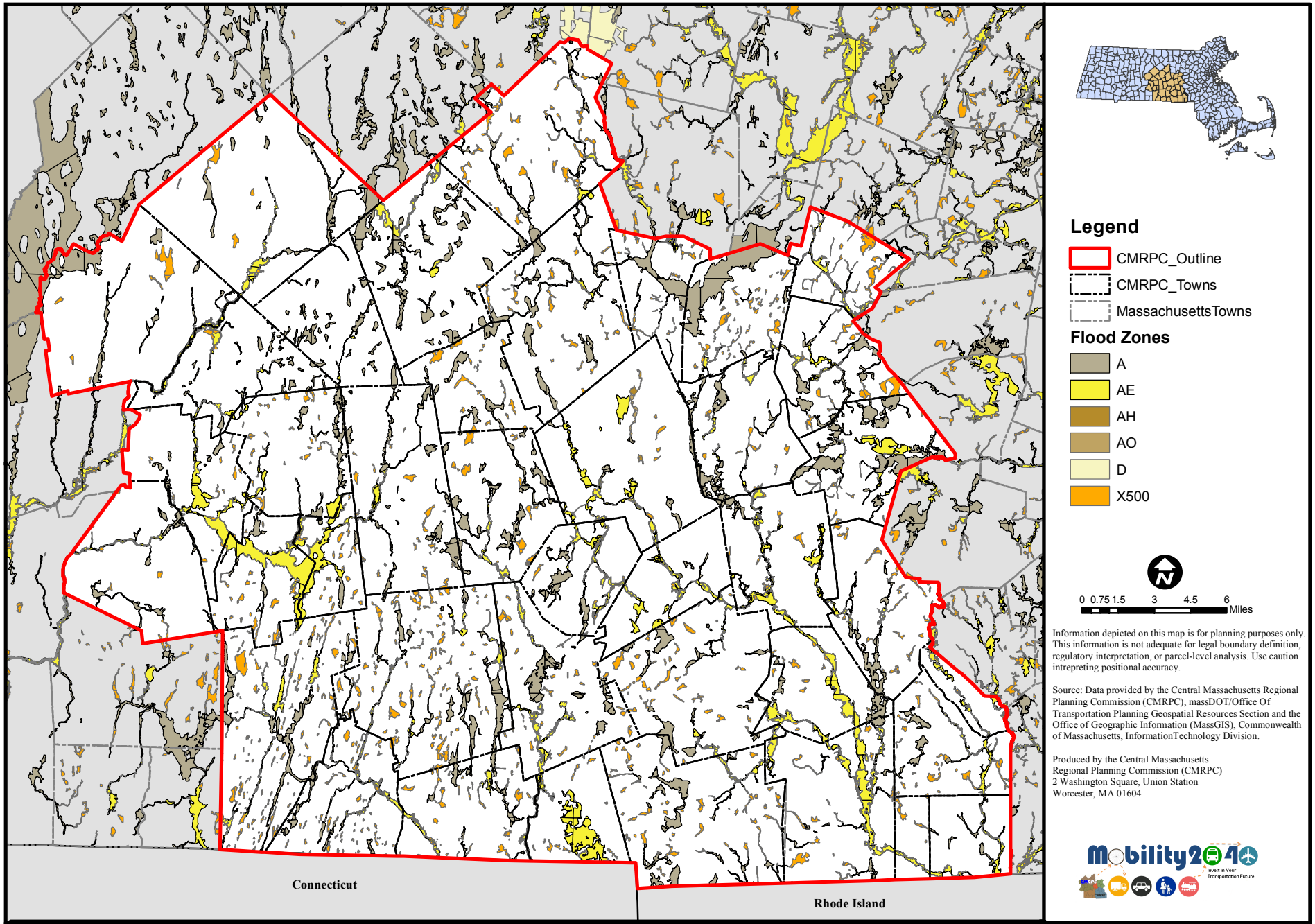
Legend
CMRPC_Outline
CMRPC_Towns
MassachusettsTowns
Flood Zones
A
AE
AH
AO
D
X500
0 0.75 1.5 3 4.5 6
Miles
Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution intrepreting positional accuracy.
Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT/Office Of Transportation Planning Geospatial Resources Section and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, InformationTechnology Division.
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Figure III-4: FEMA Flood Hazard Areas

Particular attention is placed on BioMap2, maintained by the Natural Heritage and Endangered Species Program (NHESP) and depicted in the MassGIS datalayer. In 2001 and 2003 the NHESP produced the original BioMap and Living Waters biodiversity conservation plans. *BioMap2*, developed in partnership with The Nature Conservancy, replaces the earlier plans and it is designed to guide strategic biodiversity conservation in Massachusetts over the next decade by focusing land protection and stewardship on the areas that are most critical for ensuring the long-term persistence of rare and other native species and their habitats, exemplary natural communities, and a diversity of ecosystems. [13] In the CMRPC region, there are 87,263.42 GIS acres of BioMap2 Core area and 117,322.17 GIS acres of BioMap2 Critical Natural Landscape area.

Significant habitats in the region as included in BioMap2 include the following:

- *Core Habitat* in Berlin, Brookfield, Boylston, Princeton, Holden and West Boylston
- *Critical Natural Landscapes* in Dudley, Rutland and East Brookfield

Cultural, Archaeological and Historic Features

Section 4(f) of the Department of Transportation Act (1966), as amended, stipulates that FHWA and any other DOT agency cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless some conditions apply. In other words, avoidance of impacts is the primary and foremost mitigation strategy to be used in these cases, unless there's no other feasible alternative to the use of the land.

In Massachusetts, compliance with Section 4(f) is enforced by MassDOT Cultural Resources Unit (CRU), which is responsible for reviewing transportation projects and filing appropriate documentation to ensure all projects comply with federal and state historic preservation laws and regulations.[14] The CRU maintains the Massachusetts "Historic Bridge Inventory", archaeological reports and transportation-related historic photographs. Possible impacts to buildings, burial grounds, structures, objects and historic districts will require direct coordination with the CRU within MassDOT.

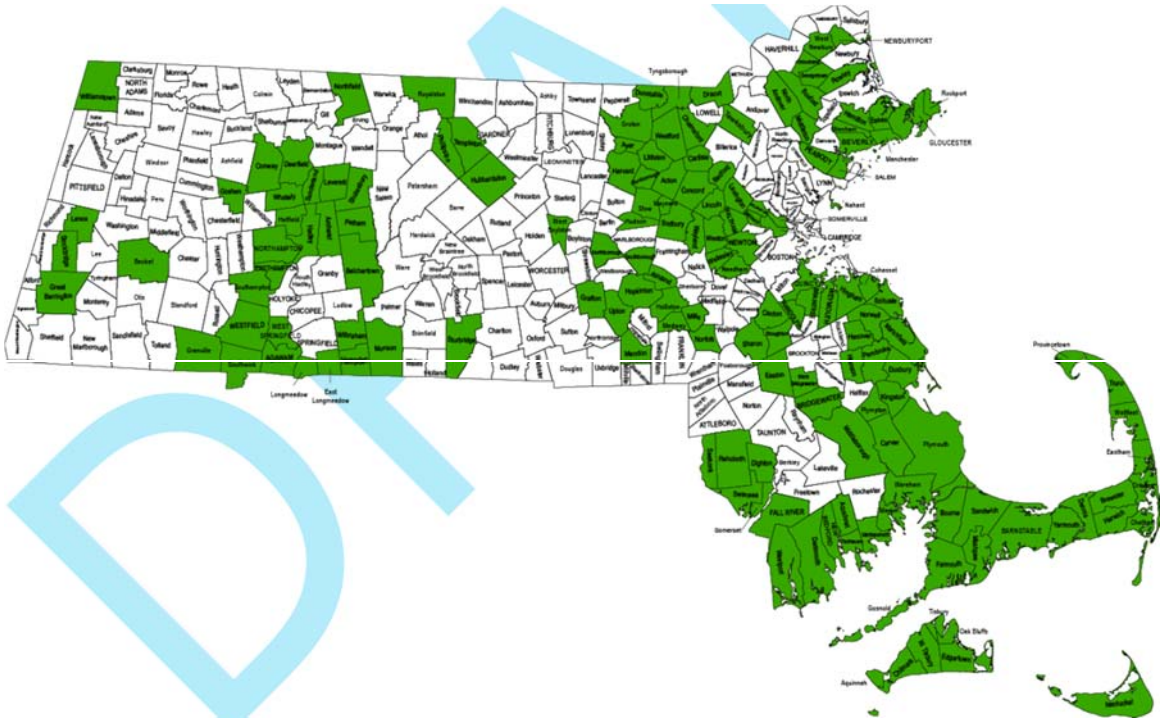
In addition, the Massachusetts Historical Commission (MHC) maintains the Massachusetts Cultural Resource Information System (MACRIS). MACRIS includes the inventory of buildings, burial grounds, structures and objects, areas and historic districts. It also includes the legal historic designations applied under local, state or federal law. MassGIS has a MHC Historic

[13] http://maps.massgis.state.ma.us/dfg/biomap2.htm
[14] http://www.massdot.state.ma.us/highway/Departments/EnvironmentalServices/CulturalResourcesUnit.aspx

Inventory datalayer showing MACRIS data. Based on this datalayer, in the CMMPO region there are 14,583 total identified buildings, burial grounds, objects and structures included in the MACRIS database. The database also identifies historic areas in the region and their legal historic designation. There are 124 National Register District (NRDIS), 54 National Register Multiple Resource Area (NRMRA), 16 National Register – Individual Property (NRIND), 13 Local Historic Districts (LHD), 8 Preservation Restriction (PR), 6 National Register Multiple Property Submission (NRMPS), 5 National Register Determination of Eligibility (NRDOE), and 2 National Register Thematic Resource Area (NRTRA). Of these, the most recent designation (2013) is the Crown Hill Historic District LHD in Worcester.

Furthermore, in the region the towns of Sturbridge, Grafton, West Boylston, Northborough, Upton and Mendon adopted the Community Preservation Act, which allows the communities to create a local Community Preservation fund used for open space protection, historic preservation and the provision of affordable housing. See Figure III-5.

Figure III-5: Community Preservation Adoption Map



Community Preservation Coalition. Map retrieved at: http://www.communitypreservation.org/content/map

Areas of Critical Environmental Concern

Areas of Critical Environmental Concern (ACEC) are places in Massachusetts that receive special recognition because of the quality, uniqueness and significance of their natural and cultural resources. These areas are identified and nominated at the community level and are

reviewed and designated by the state's Energy and Environmental Affairs (EEA) Secretary. The region has two designated ACECs: 1) Cedar Swamp, located in Westborough and Hopkinton, and the first designated ACEC in Massachusetts; 2) the Miscoe Brook, Warren Brook and Whitehall Reservoir watersheds in the towns of Grafton and Upton.

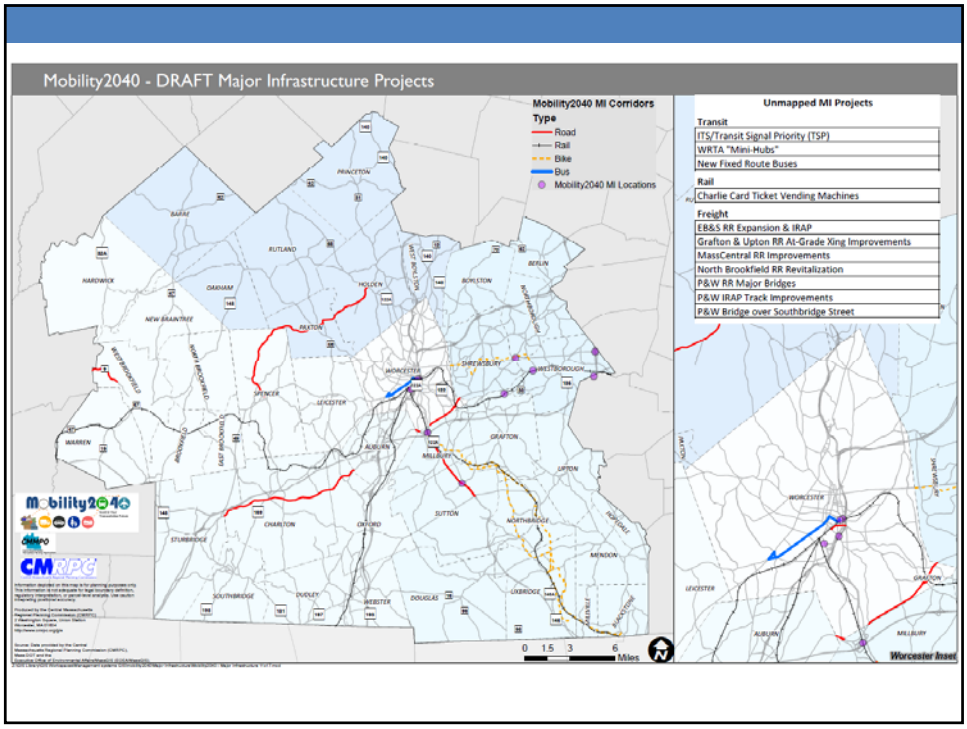
ANNUAL ENVIRONMENTAL CONSULTATION SESSION

April 15, 2015
Union Hall

Mobility2040
Invest in Your Transportation Future

Central Massachusetts Metropolitan Planning Organization
Long Range Transportation Plan

https://www.youtube.com/watch?v=QsTgdN-sLBY



Long Range Transportation Plan

- CMMPO actively seeks stakeholder and public input for long-range, 25 year vision
- Staff to CMMPO develops multi-modal, intermodal document that seeks to integrate all major transportation modes in the greater region
- CMMPO discusses, refines and endorses long-range plan

Project Development and Selection

- CMMPO seeks community project requests for consideration
- Projects also proposed by MassDOT, including major infrastructure improvements and the ongoing repair or replacement of major bridges
- Upon MassDOT Project Review Committee (PRC) approval, projects can begin design

Transportation Improvement Program

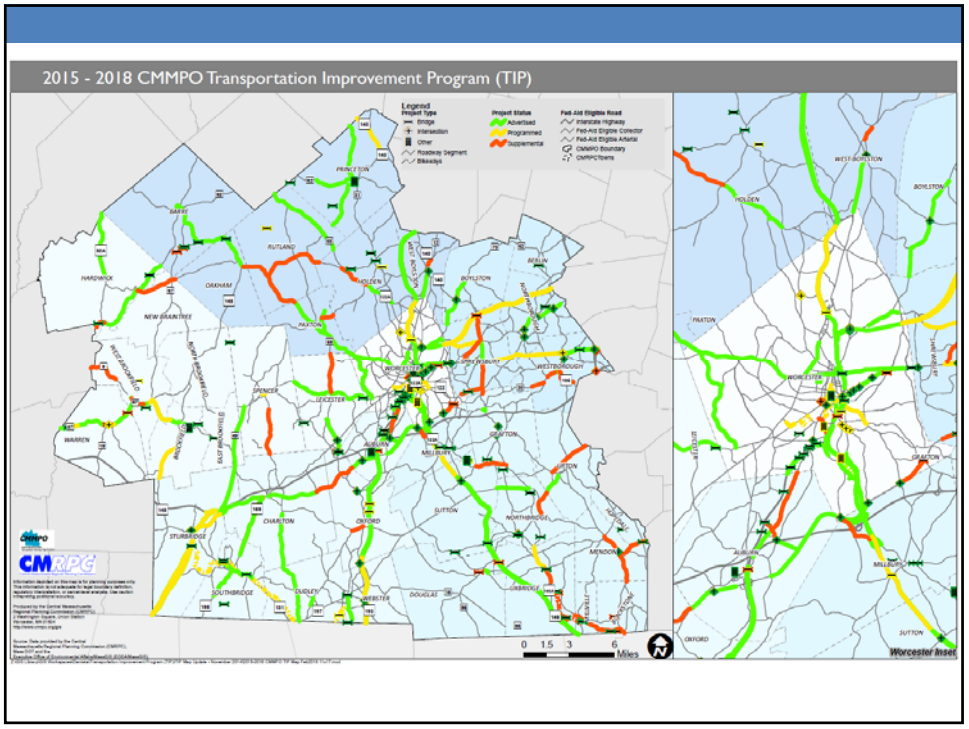
- CMMPO conducts "TIP Workshop" to review projects in a performance-based manner that are eligible for available federal-aid funding. Later, suggested Draft TIP released for 30-day public review & comment period
- MPO Advisory Committee considers proposed highway and transit project listings; makes recommendation to CMMPO
- CMMPO fully considers all comment, makes refinements and endorses four-year TIP for both highway and transit

Mobility2040 Performance Management: GOALS

- Reduce Congestion and Improve Mobility for all Modes
- Increase Transportation Options and Promote Healthy Modes
- Improve the Safety and Security of the Region
- Achieve State of Good Repair
- Reduce Greenhouse Gas and Promote Sustainable Practices
- Equitable Transportation for all Populations
- Improve Economic Vitality and Freight Movement

Performance Management

- Congestion
- Safety
- Pavement
- Modal Shift


2015 - 2018 CMMPO Transportation Improvement Program (TIP)
Legend
Project Type
Bridge
Intersection
Other
Roadway Segment
Bikeways
Project Status
Advertised
Programmed
Supplemental
Fed-Aid Eligible Road
Interstate Highway
Fed-Aid Eligible Collector
Fed-Aid Eligible Arterial
CMMPO Boundary
CMRPC Towns
CMMPO
CMRPC
0 1.5 3 6
Miles
Worcester Inset

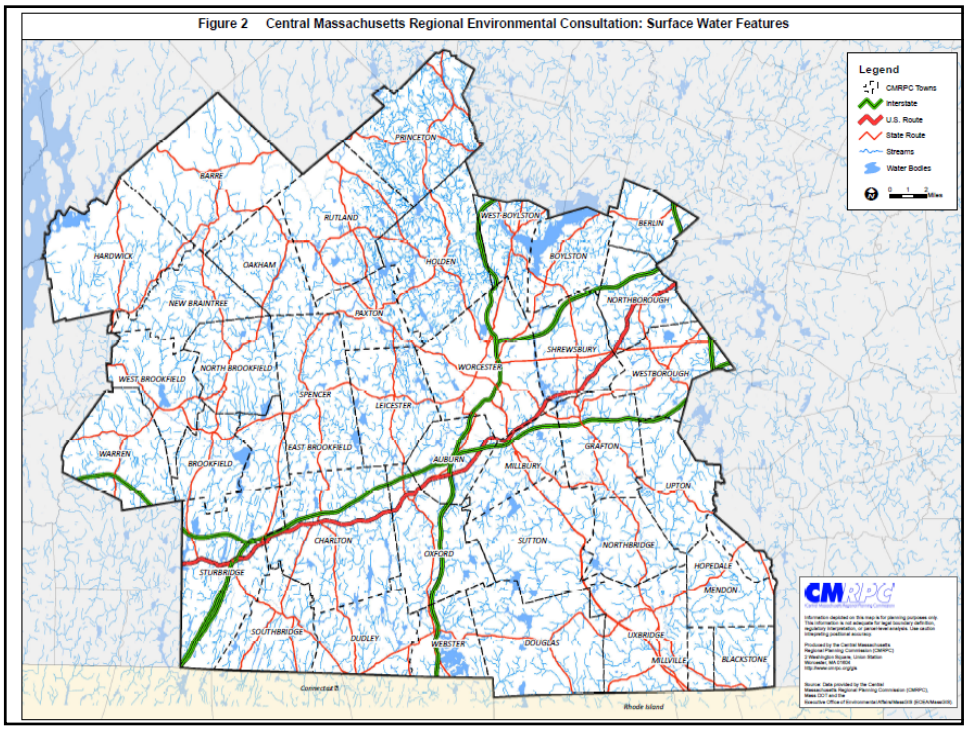


Figure 2 Central Massachusetts Regional Environmental Consultation: Surface Water Features
Legend
CMRPC Towns
Interstate
U.S. Route
State Route
Streams
Water Bodies
Miles
PRINCETON
BARRE
RUTLAND
HARDWICK
OAKHAM
HOLDEN
WEST BOYLSTON
BERLIN
BOYLSTON
NEW BRAINTREE
PAXTON
NORTHBOROUGH
SHREWSBURY
NORTH BROOKFIELD
WEST BROOKFIELD
WORCESTER
WESTBOROUGH
SPENCER
LEICESTER
WARREN
BROOKFIELD
EAST BROOKFIELD
AUBURN
GRAFTON
MILLBURY
UPTON
CHARLTON
OXFORD
SUTTON
NORTHBRIDGE
STURBRIDGE
HOPEDALE
MENDON
SOUTHBRIDGE
DUDLEY
WEBSTER
DOUGLAS
UXBRIDGE
MILLVILLE
BLACKSTONE
Connecticut
Rhode Island
CMRPC

Figure 1 Central Massachusetts Regional Environmental Consultation: General Land Use

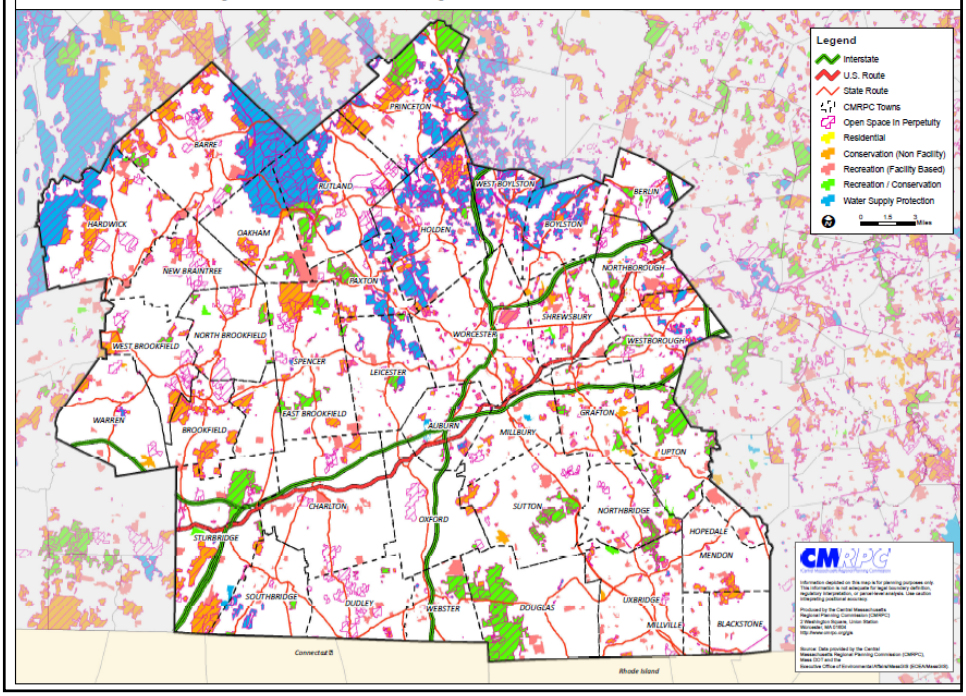
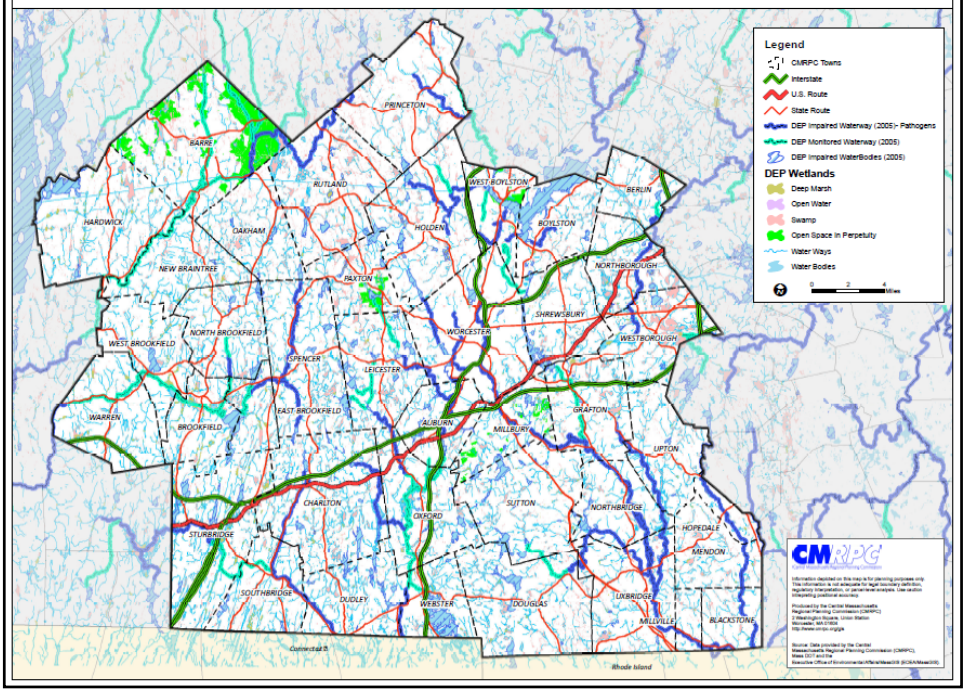


Figure 3 Central Massachusetts Regional Environmental Consultation: DEP Waterways Overview



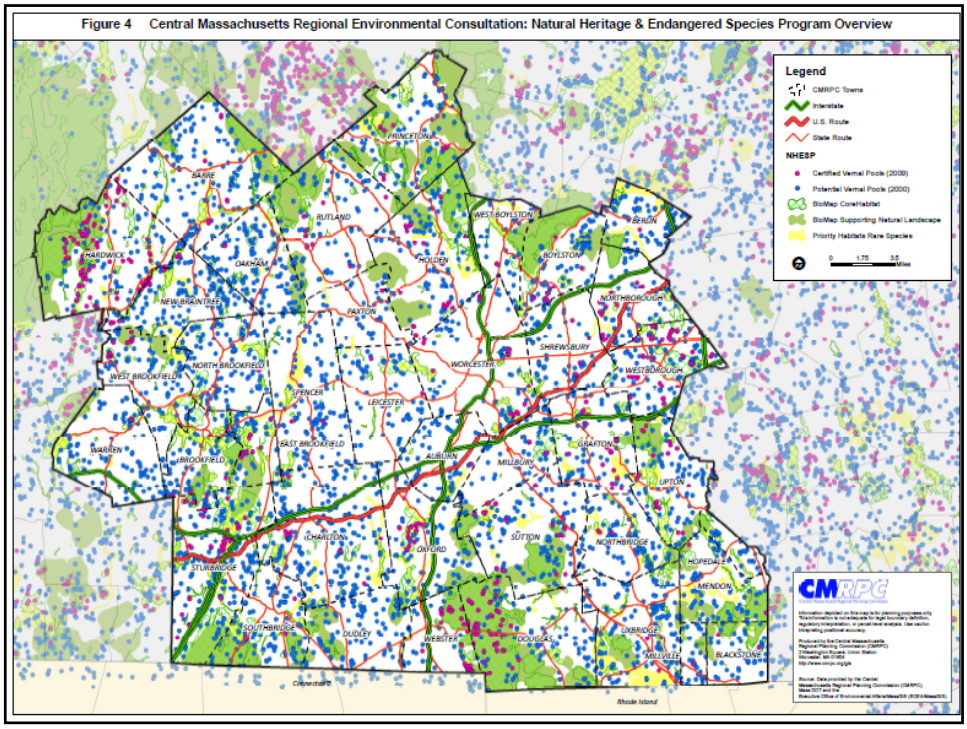
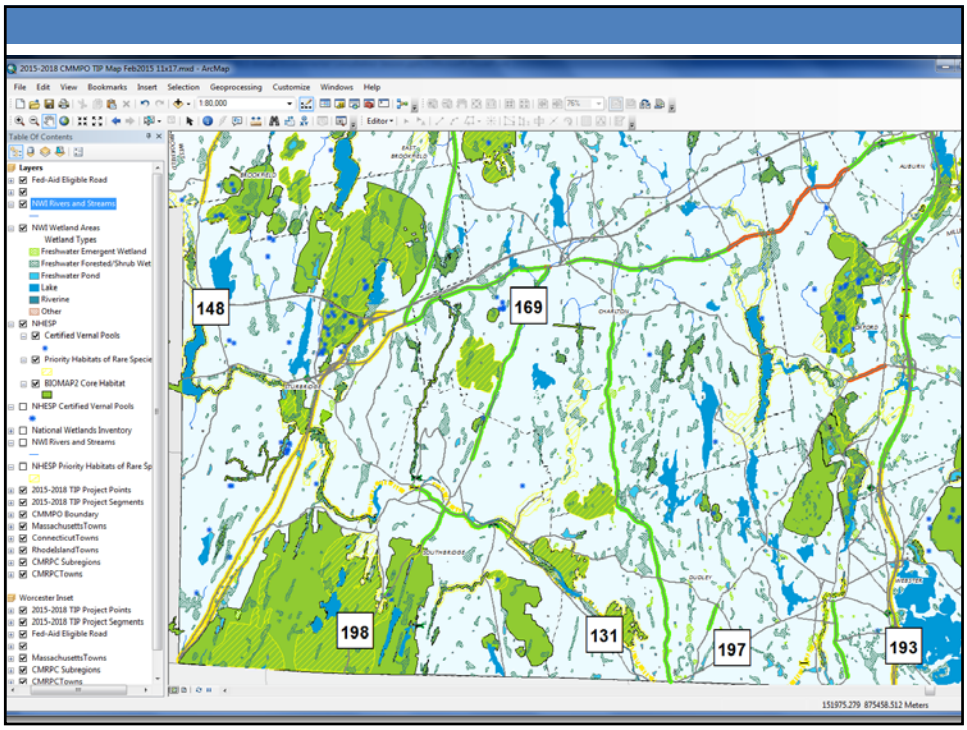


Figure 4 Central Massachusetts Regional Environmental Consultation: Natural Heritage & Endangered Species Program Overview
Legend
CMRPC Towns
Interstate
U.S. Route
State Route
NHESP
Certified Vernal Pools (2009)
Potential Vernal Pools (2000)
BioMap Core Habitat
BioMap Supporting Natural Landscape
Priority Habitats Rare Species
PRINCETON
BARRE
RUTLAND
HARDWICK
OAKHAM
HOLDEN
WEST BOYLSTON
BERLIN
BOYLSTON
NEW BRAINTREE
PAXTON
NORTHBOROUGH
SHREWSBURY
WEST BROOKFIELD
NORTH BROOKFIELD
WORCESTER
WESTBOROUGH
SPENCER
LEICESTER
WARREN
BROOKFIELD
EAST BROOKFIELD
AUBURN
GRAFTON
MILLBURY
UPTON
CHARLTON
OXFORD
SUTTON
NORTHBRIDGE
STURBRIDGE
HOPEDALE
MENDON
SOUTHBRIDGE
DUDLEY
WEBSTER
DOUGLAS
UXBRIDGE
MILLVILLE
BLACKSTONE
CMRPC
Connecticut
Rhode Island


2015-2018 CMMPO TIP Map Feb2015 11x17.mxd - ArcMap
File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help
Table Of Contents
Layers
Fed-Aid Eligible Road
NWI Rivers and Streams
NWI Wetland Areas
Wetland Types
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wet
Freshwater Pond
Lake
Riverine
Other
NHESP
Certified Vernal Pools
Priority Habitats of Rare Specie
BIOMAP2 Core Habitat
NHESP Certified Vernal Pools
National Wetlands Inventory
NWI Rivers and Streams
NHESP Priority Habitats of Rare Sp
2015-2018 TIP Project Points
2015-2018 TIP Project Segments
CMMPO Boundary
MassachusettsTowns
ConnecticutTowns
RhodeIslandTowns
CMRPC Subregions
CMRPCTowns
Worcester Inset
2015-2018 TIP Project Points
2015-2018 TIP Project Segments
Fed-Aid Eligible Road
MassachusettsTowns
CMRPC Subregions
CMRPCTowns
148
169
198
131
197
193
151975.279 875458.512 Meters

MASSACHUSETTS GLOBAL WARMING SOLUTIONS ACT

Baseline & Required Progress Levels

Defined / adopted [1990] baseline:

94.4 MMTCO2

94,400,000 Metric Tons

94,400,000,000 Kilograms

Business As Usual (BAU) projections of **2020 CO2** have been officially estimated to be **94.4 MMTCO2**, which is approximately equal to 1990 levels.

MASSACHUSETTS CLEAN ENERGY AND CLIMATE PLAN

Targeted reduction has been set at 25% by 2020 (from all sources).

Thus, compared to doing nothing new, Massachusetts needs to implement policies and actions that add up to a 25% reduction in current CO2 emissions.

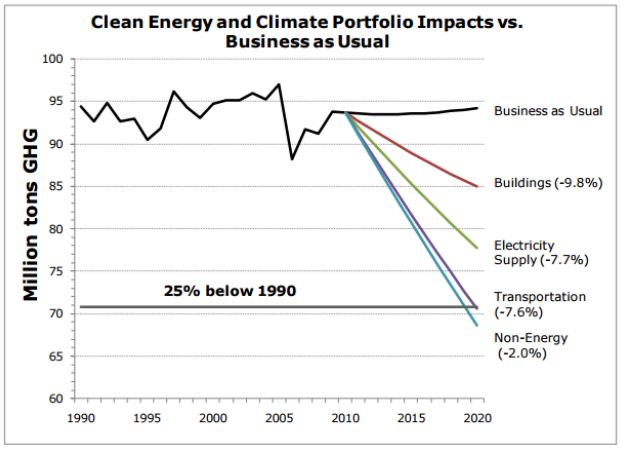
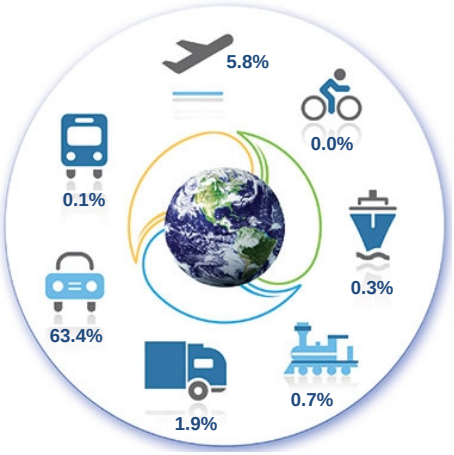


Figure ES–5. Emissions reductions by sector for the portfolio of policies, at the mid-range estimate of 27 percent below 1990 levels by 2020.

EOEEA. Massachusetts Clean Energy and Climate Plan for 2020. December 2010.

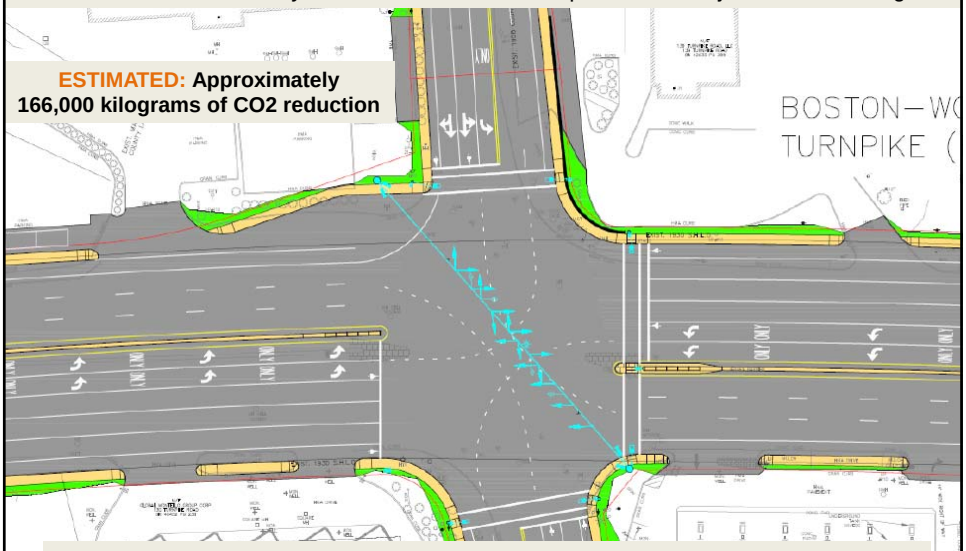
MASSACHUSETTS CLEAN ENERGY AND CLIMATE PLAN

- Reductions in GHG from the transportation sector represents **7.6%** of the 25% targeted reduction by 2020.
- GreenDOT share is only **1.2%** of the 7.6%, including the infrastructure planning activities of MassDOT and the planning regions.
- Total reduction in kilograms expected from project prioritization & design (and other GreenDOT policies) is about **1,133,000,000 kg/year**.



MassDEP. 2011 Total CH4 and N2O Emissions from Mobile Sources (MTCO2E)

CMMPO TIP Route 9 / Lyman Street Intersection Improvement Project in Westborough



ESTIMATED: Approximately 166,000 kilograms of CO2 reduction

This is 0.0001323 or one-hundredth of one percent of the required 2020 reduction amount that must result from GreenDOT policy

NEED TO IMPLEMENT OVER 7,500 INTERSECTION IMPROVEMENTS STATEWIDE, SIMILAR TO THE ROUTE 9 / LYMAN STREET PROJECT

MEASURABLE IMPACTS

100 intersection projects

5 years

13 planning regions

=

1,300 PROJECTS

100 intersection** improvement projects over **5 years** in all of the **13 planning regions** is equal to **1,300 projects**, and still will fall short by over **6,000 projects

MEASURABLE IMPACTS

- Many transportation projects have **zero** GHG impact
- "Road Diet" may help to reduce Single Occupancy Vehicles (SOV) use, but estimated effect is far smaller than any reasonably-sized intersection improvement project that reduces vehicle delay.

ANNUAL CO2 SAVINGS FROM PED & BIKE PROJECTS

- **Urban Area:** Add new Bike Lane
  - **1 mile length: 7,500 kg/year**
  - (20 of these = one Route 9 / Lyman Street project
- **Urban Area:** Add new sidewalk
  - **0.25 mile length: 1,000 kg/year**
  - (150 of these = one Route 9 / Lyman Street project)
- **Suburban Area:** Add new sidewalk and bike lane
  - **0.50 mile length: 500 kg/year**
- **Rural Area:** Add bike lane/facility
  - **1 mile: 150kg/year**

Healthy Transportation Initiative

http://ephtracking.cdc.gov/showAsthmaAndEnv.action

Worcester Division of Public Health

Acute Asthma Emergency Visits

Worcester: **862 per 100,000**
State: 563 per 100,000

Acute Asthma Hospitalization Rate

Worcester: **220 per 100,000**
State: 152 per 100,000

Asthma Mortality Rate

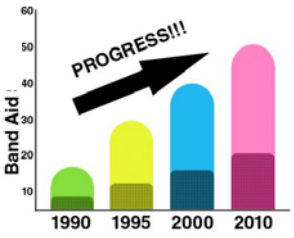
Worcester: **1.42 per 100,000**
State: 0.64 per 100,000

Source: MassCHIP, 2011

TAKEAWAY POINTS

- Transportation GHG goals for 2020 seem unlikely to be met by project design features or general intersection delay reductions alone.
- Complete Streets bicycle and pedestrian facilities have an extremely small effect in attaining CO2 reduction goals; placing unique emphasis on these projects is not productive.
- Larger intersection improvements and standalone bike trails do have some nominal effects.
- ***Transportation GHG goals are only likely to be met in the near term by some combination of mode shift and other VMT reductions, and in the long term, by changes in fuel efficiency and power generation methods for vehicles.***

The Band Aid



Or the Cure

CMRPC

CMMPO

QUESTIONS & ANSWERS

April 15, 2015
Union Hall

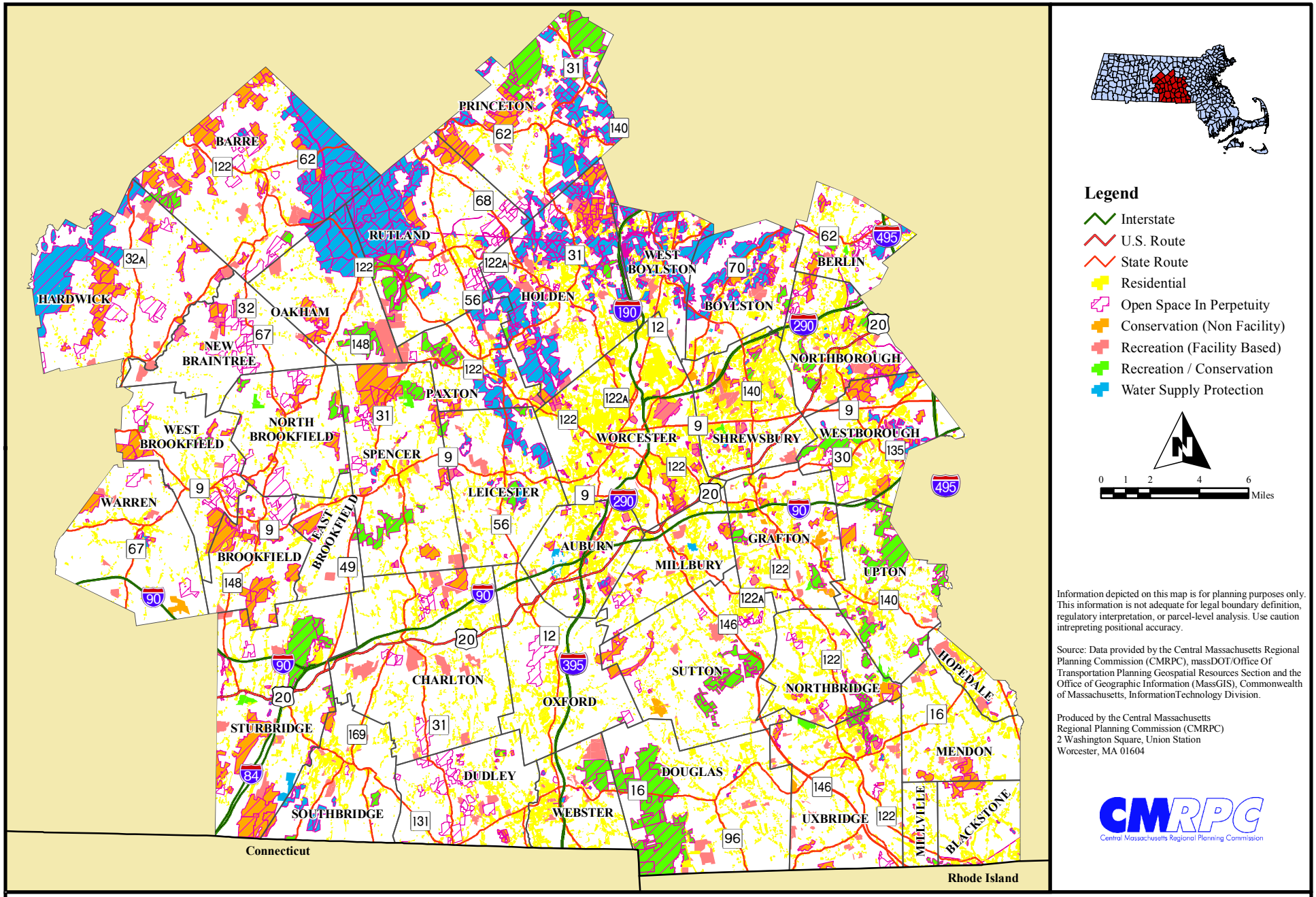


Figure II-4 Central Massachusetts Regional Environmental Consultation: General Landuse

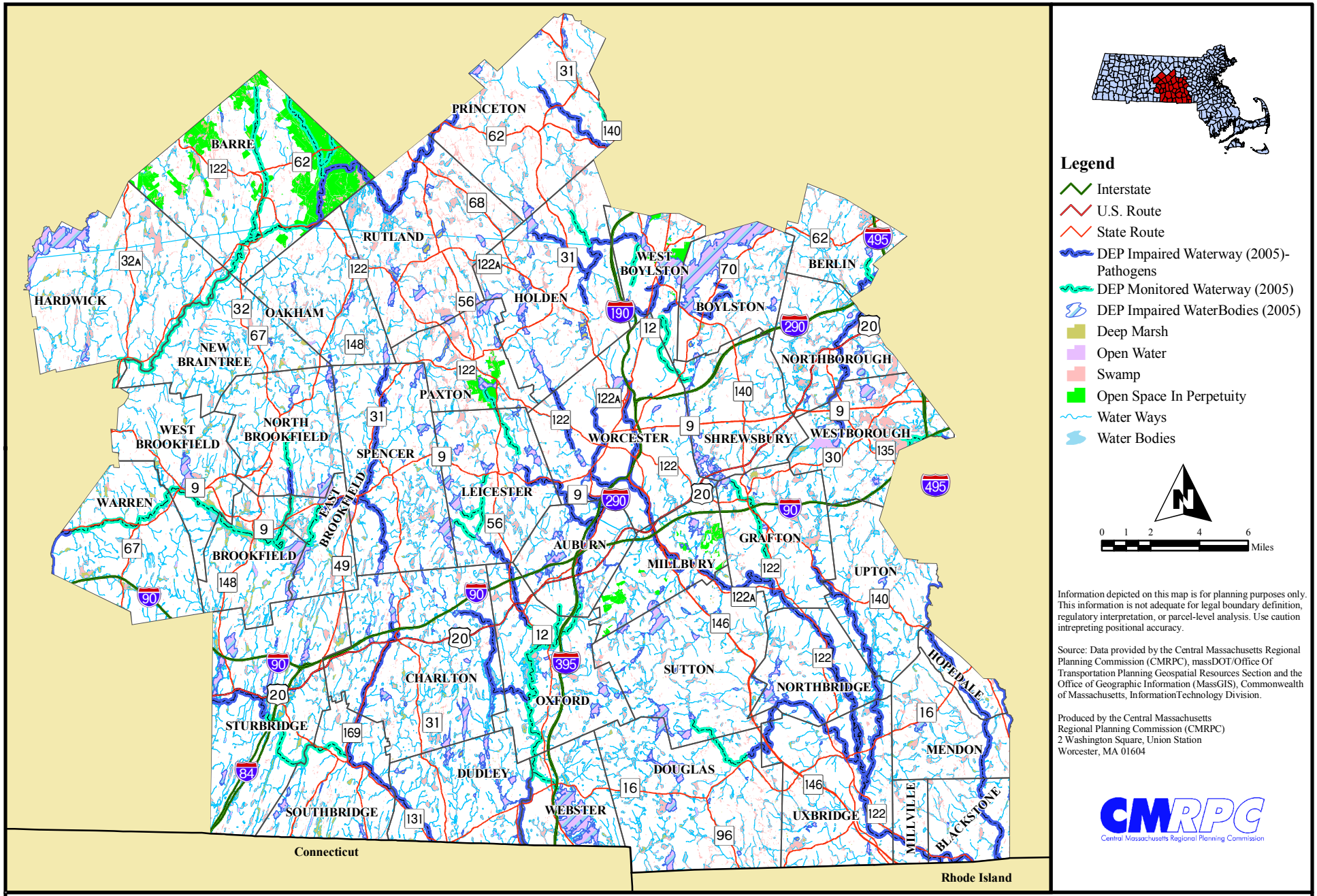
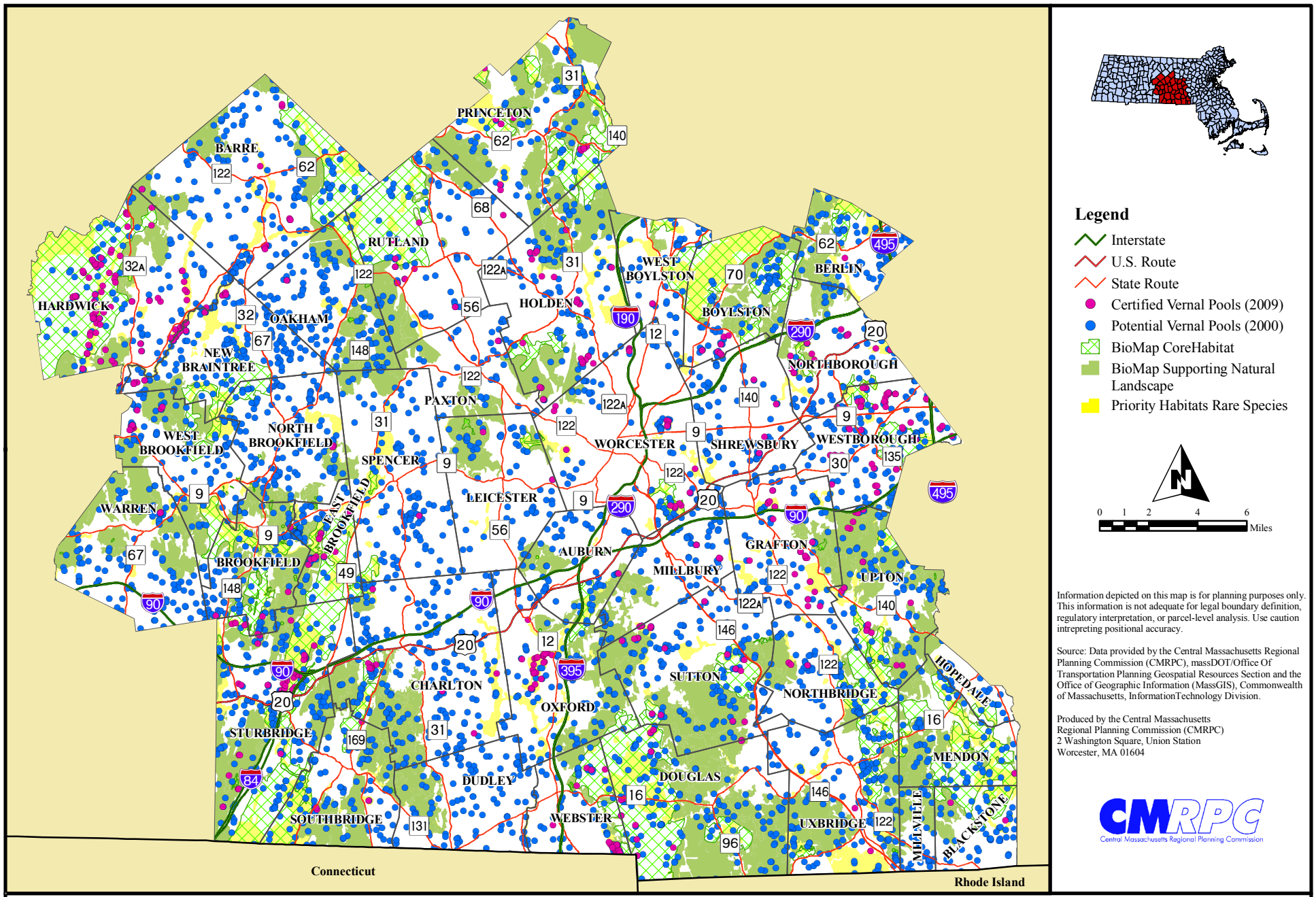


Figure II-5 Central Massachusetts Regional Environmental Consultation: DEP Waterways Overview



Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution intrepreting positional accuracy.

Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT/Office Of Transportation Planning Geospatial Resources Section and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, InformationTechnology Division.

Produced by the Central Massachusetts Regional Planning Commission (CMRPC)
2 Washington Square, Union Station
Worcester, MA 01604

CMRPC
Central Massachusetts Regional Planning Commission

Figure II-6 Central Massachusetts Regional Environmental Consultation: Natural Heritage & Endagered Species Program Overview

CHAPTER IV

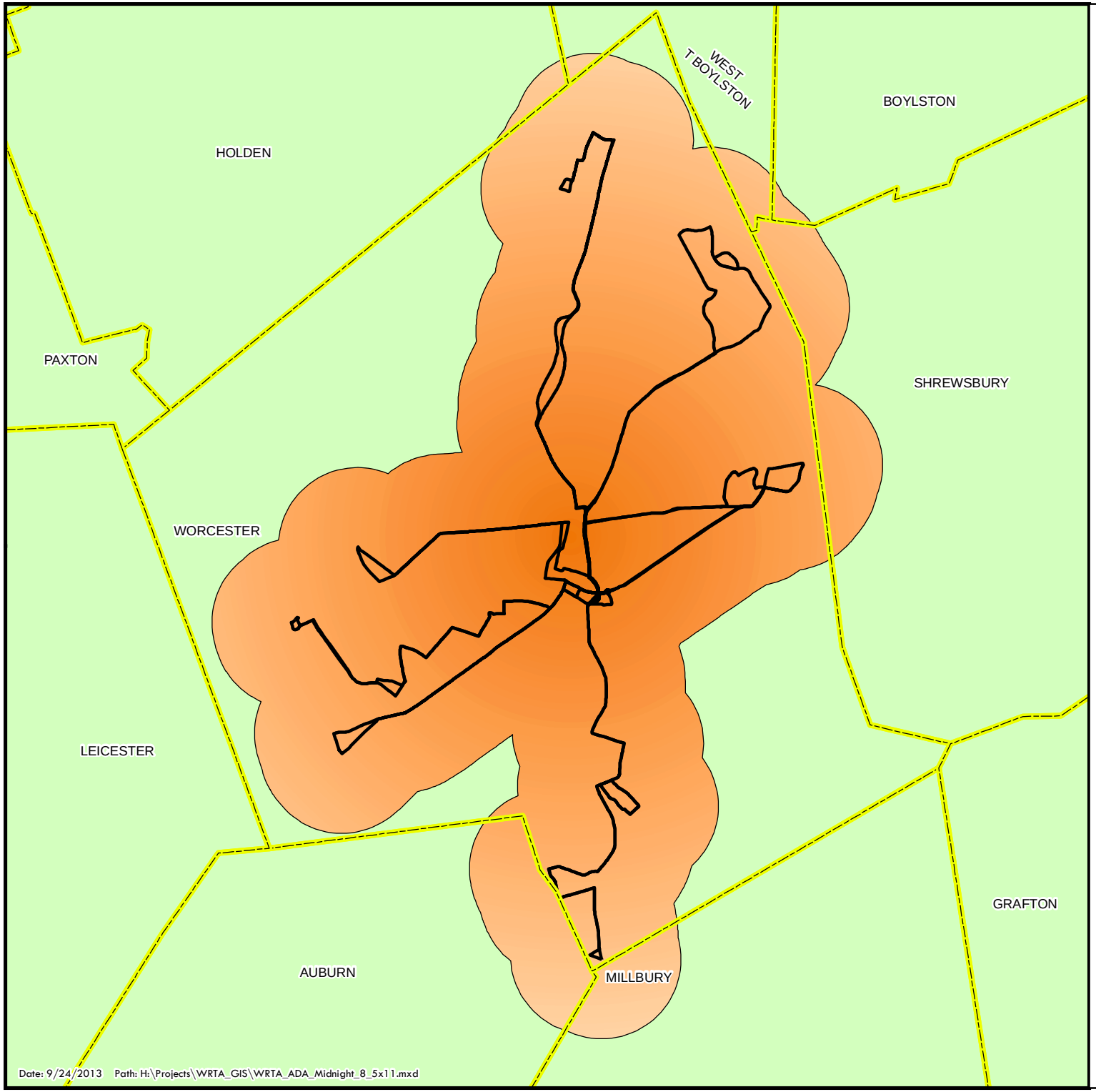
Transportation Modes

Public Transit and Passenger Rail

Fixed-Route Safety and Security

Below is the URL address for the WRTA's Comprehensive Service analysis

http://www.therta.com/comprehensive-service-analysis-outreach/

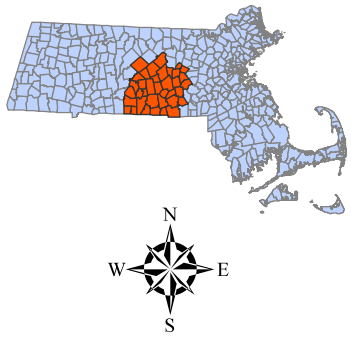


WRTA Midnight Fixed Route & ADA Paratransit Services

(Starting Aug. 2013)

Legend

- WRTA Fixed Route Service
- Town Boundary
- Member Municipality
- ADA Service Area
- Non-Member Communities



N
W E
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1 in = 1 miles

Source: Data provided by the Central Massachsuetts Regional Planning Commission (CMRPC), massDOT and the Executive Office of Environmental Affairs/MassGIS (EOEA/MassGIS).

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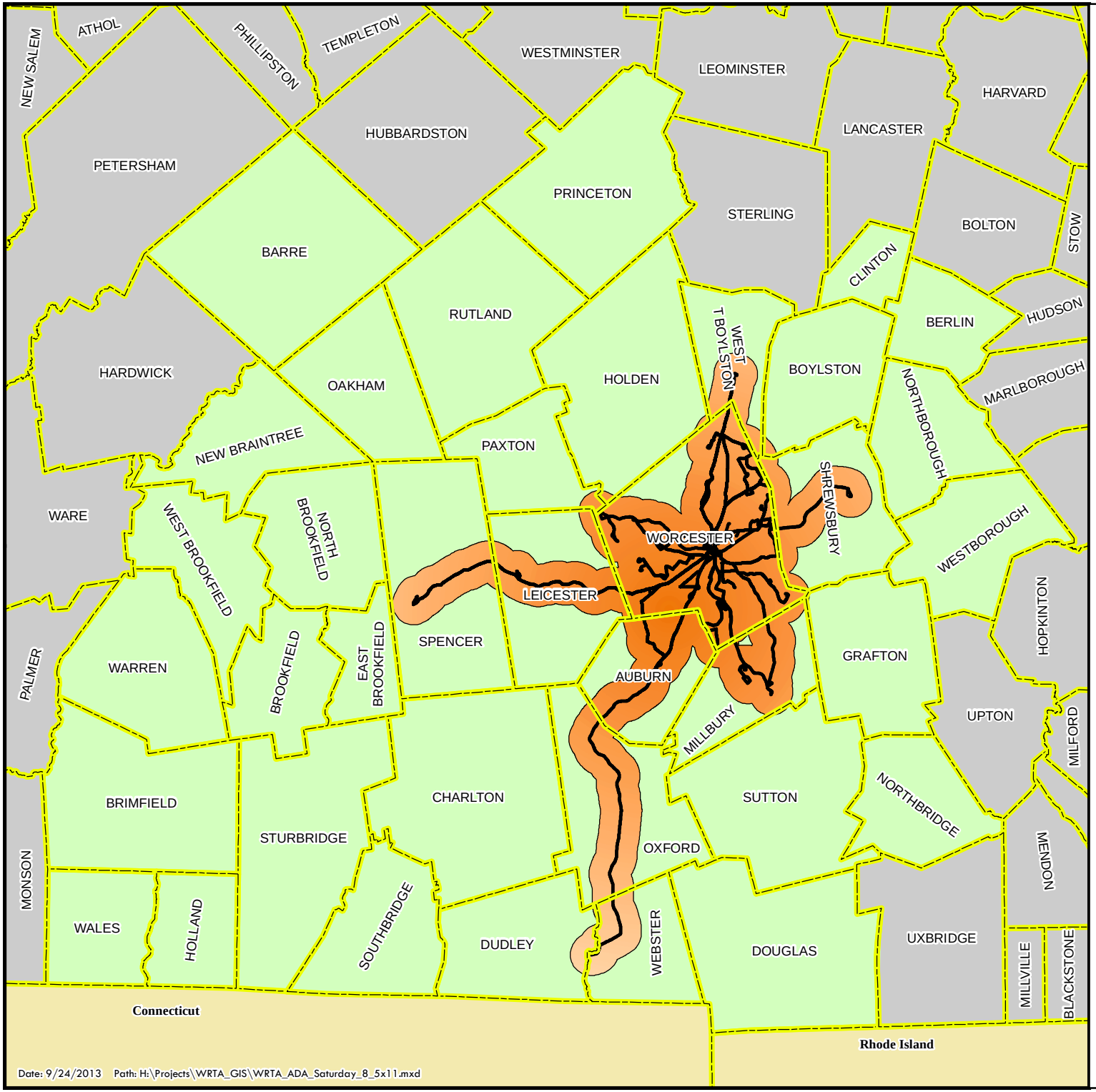
WORCESTER REGIONAL TRANSIT AUTHORITY

WRTA Saturday Fixed Route & ADA Paratransit Services

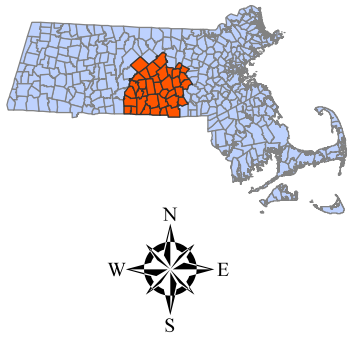
(Starting Aug. 2013)



Date: 9/24/2013 Path: H:\Projects\WRTA_GIS\WRTA_ADA_Saturday_8_5x11.mxd

Legend

- WRTA Fixed Route Service
- Town Boundary
- Member Municipality
- ADA Service Area
- Non-Member Communities



N
W E
S

1 in = 5 miles

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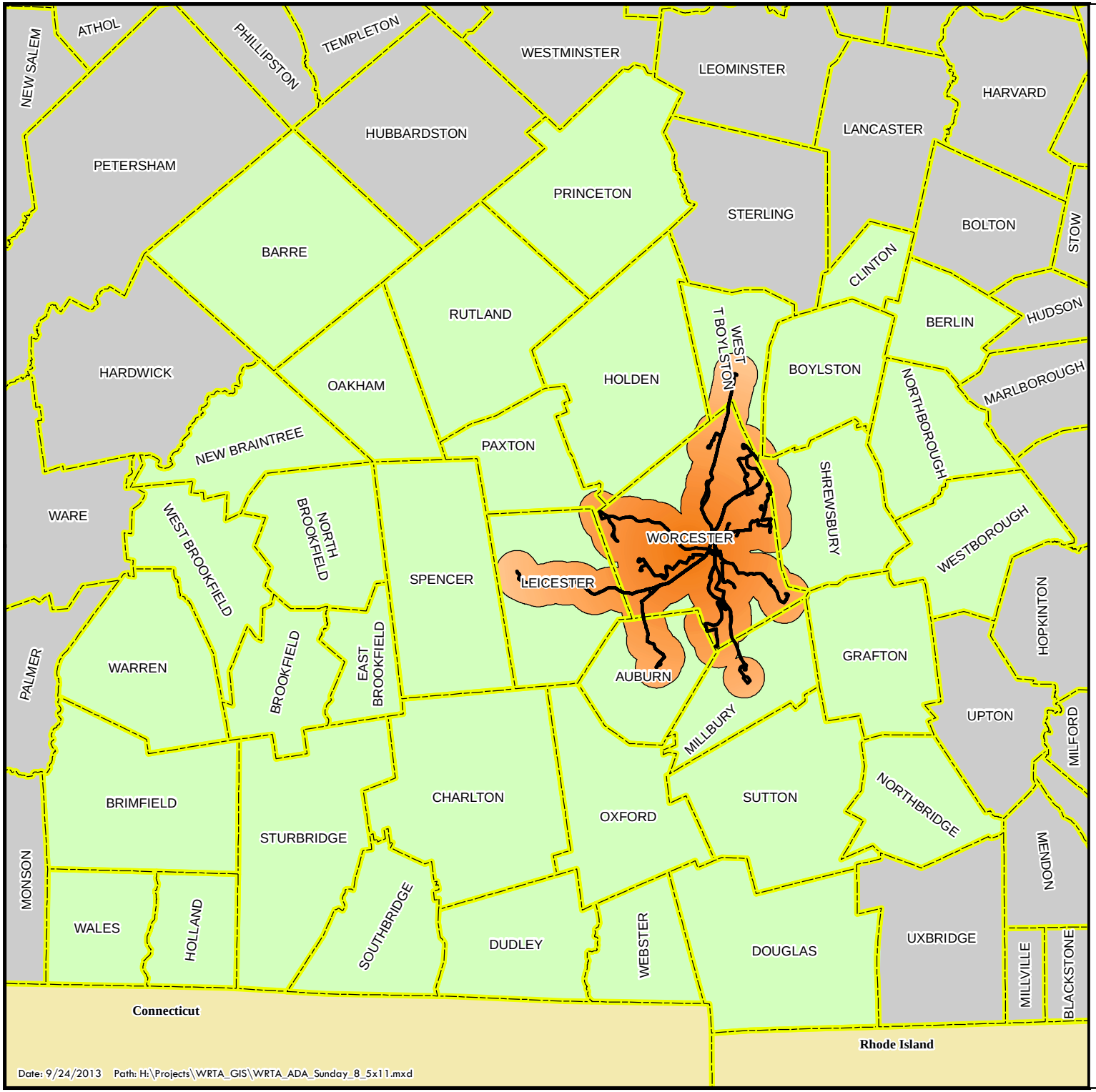
WORCESTER REGIONAL TRANSIT AUTHORITY

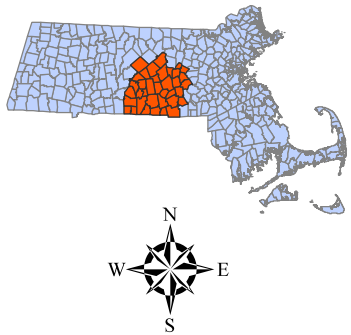
WRTA Sunday Fixed Route & ADA Paratransit Services

(Starting Aug. 2013)



Legend

- WRTA Fixed Route Service
- Town Boundary
- Member Municipality
- ADA Service Area
- Non-Member Communities



1 in = 5 miles

Source: Data provided by the Central Massachsuetts Regional Planning Commission (CMRPC), massDOT and the Executive Office of Environmental Affairs/MassGIS (EOEA/MassGIS).

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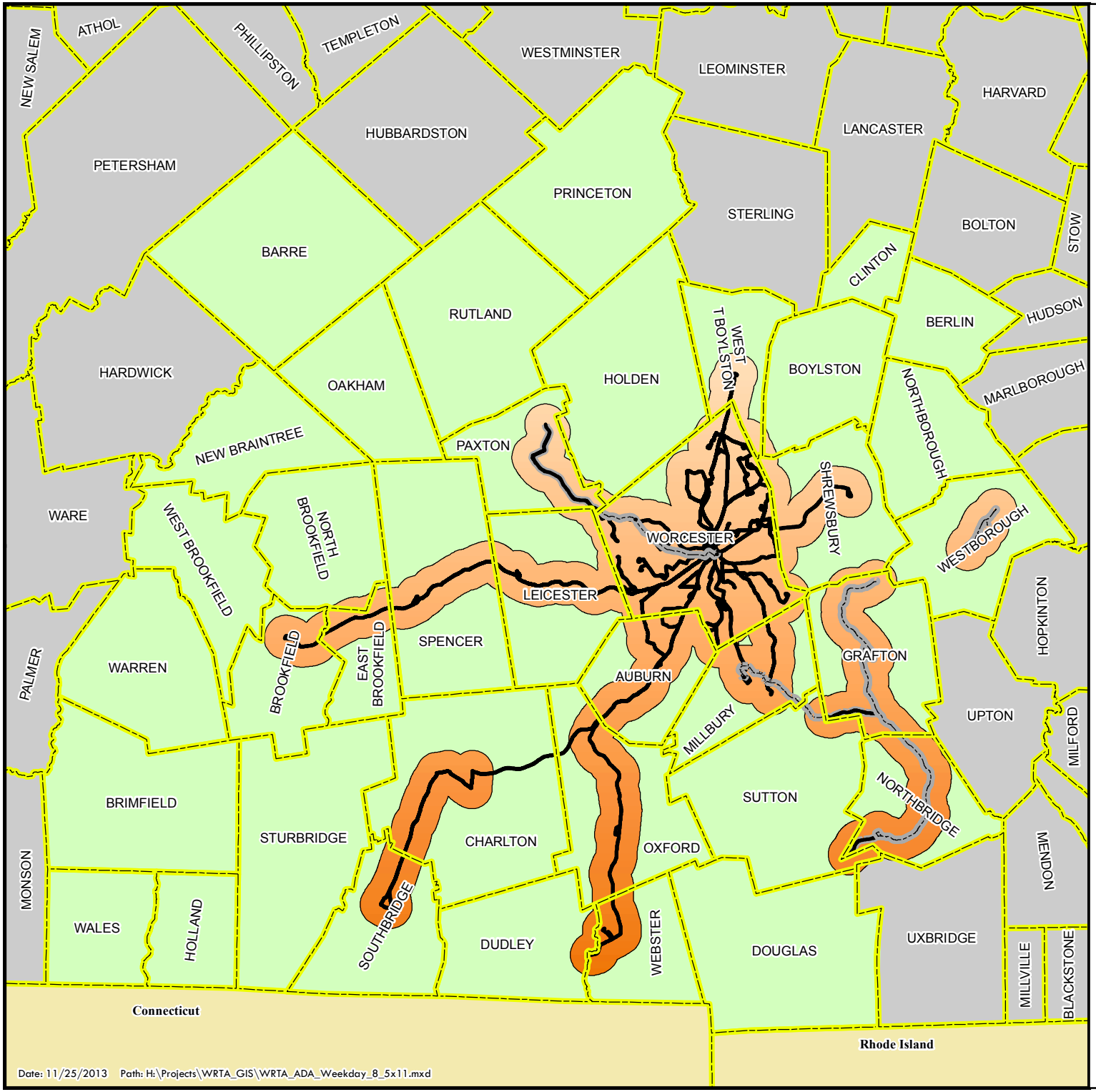
Worcester, MA 01604

Date: 9/24/2013 Path: H:\Projects\WRTA_GIS\WRTA_ADA_Sunday_8_5x11.mxd

WORCESTER REGIONAL TRANSIT AUTHORITY

WRTA Weekday Fixed Route & ADA Paratransit Services

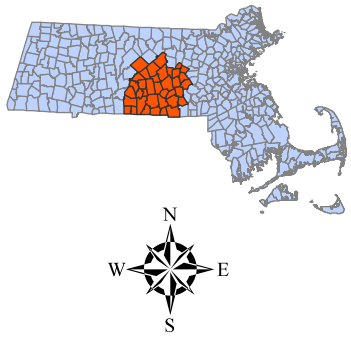
(Starting Dec. 2013)



Date: 11/25/2013 Path: H:\Projects\WRTA_GIS\WRTA_ADA_Weekday_8_5x11.mxd

Legend

- WRTA Fixed Route Service
- Shuttle Route
- Town Boundary
- Member Municipality
- ADA Service Area
- Non-Member Communities



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Produced by the

CMRPC

Central Massachusetts Regional Planning Commission

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WORCESTER REGIONAL TRANSIT AUTHORITY

RCC Member Groups

Ascentria Care Alliance
Center for Living and Working
Center of Hope
Central Mass Agency on Aging
Central Mass Workforce Investment Board
Central Massachusetts Agency on Aging
Central Massachusetts Employment Collaborative
Central Massachusetts Regional Employment Board
City of Worcester
CMRPC
DATTCO
Department of Developmental Services
Elder Services Worcester Area
Friends of Millbury Seniors
Head Start, Worcester Community Action Council
Hopedale COA
Hummingbird Transportation
Mass Mobility
MassDOT
MassRIDES
Mass Commission for the Blind
Neighbor to Neighbor
Paratransit Brokerage
QCC Southbridge Campus
Quaboag Valley Community Development Corp
Regional Employment
Rehabilitative Resources Inc
Reliable Transportation
Riverside Community Care
SCM Elderbus
Seven Hills Foundation
Shrewsbury Council on Aging
The Bridge of Central Massachusetts
Tradewinds
Tri-Valley Elder Services
UMass Memorial
UnitedHealthcare Community Plan
Veterans, Inc
Webster Adult Learning
Worcester Community Action Council
Worcester Elder Affairs, Senior Center
Worcester Office on Disabilities
Worcester Polytechnic Institute
Worcester Refugee Assistance Project
Worcester Senior Center
Work Inc

Workforce Central
WRTA

FRANK S. DE MASI – BSME/CERT PUB MGT
26 MACARTHUR ROAD, WELLESLEY, MA 02482 - (781) 235-6383

BULLETED LIST OF SIX DIESEL MULTI UNIT (DMU) PROJECTS
Basis: MBTA Indigo Line Described in 2014 MassDOT CIP

F. S. DeMasi Recommended DMU Service Implementation on existing Commuter Rail Routes

1. Fairmount Readville to South Station: This is a State Implementation Plan Transit Commitment for Big Dig Traffic and Air Quality Mitigation. With final completion of stations this is highest priority and most easily accomplished. Suggest maintenance and layover facility at Massport/Boson Marine Industrial Park. See MassDOT SIP:
http://www.massdot.state.ma.us/Portals/17/docs/sip/2013%20SIP%20Annual%20Report%20-%20final.pdf See Mass EOT Fairmount Line Improvement using DMUs
http://www.eot.state.ma.us/downloads/DMU_Fairmount.pdf

2. Riverside MBTA Green Line /Worcester Line to South Station Connector: Long term project on MBTA Program for Mass Transit (PMT) This project would add a new station on the Framingham/ Worcester commuter rail line near Route 128 on the border of Newton and Weston. It would be between the existing Wellesley Farms and Auburndale stations, possibly replacing the latter. Capital Features: This project would consist of one new station with a regional parking facility on an existing line and new access to reach the site from Route 128. Ref MBTA PMT:
http://www.ctps.org/Drupal/data/pdf/studies/transit/pmt/PMT_App_F.pdf

3. Lynn to North Station: Connector: High demand commutation service to North Station Allows Express commuter rail service reducing transit time from Rockport Newbury Station. Ref MBTA PMT:
http://www.ctps.org/Drupal/data/pdf/studies/transit/pmt/PMT_App_A.pdf

4. Anderson/Woburn Connector: Allows Express commuter rail service reducing transit time Lowell to North Station Ref MBTA PMT:
http://www.ctps.org/Drupal/data/pdf/studies/transit/pmt/PMT_App_A.pdf

DMU Service Implementation
Non-existing Commuter Rail Service at Present

5. DMU service from Back Bay to the Convention Center: Service is planned for an existing freight branch to be rehabilitated to accommodate multimodal rail service. The service might be extended to Black Falcon Terminal and Design Center. May be possibility for Seaport TMA/Boston Convention Center service rather than MBTA through interoperability agreement. See TMA Ref:
http://www.seaporttma.org/ Boston Convention Center Strategic Plan Ref:
http://www.t5boston.com/pdf/BCEC%20Strategic%20Development%20Plan_FINAL.pdf

6. West Station to Cambridge and North Station via Grand Junction: Requires reconfiguration Beacon Park Yard, Signalization, new CWR, upgraded at grade crossings. See study at:
http://www.massdot.state.ma.us/planning/Main/CurrentStudies/GrandJunctionTransportationStudy.aspx

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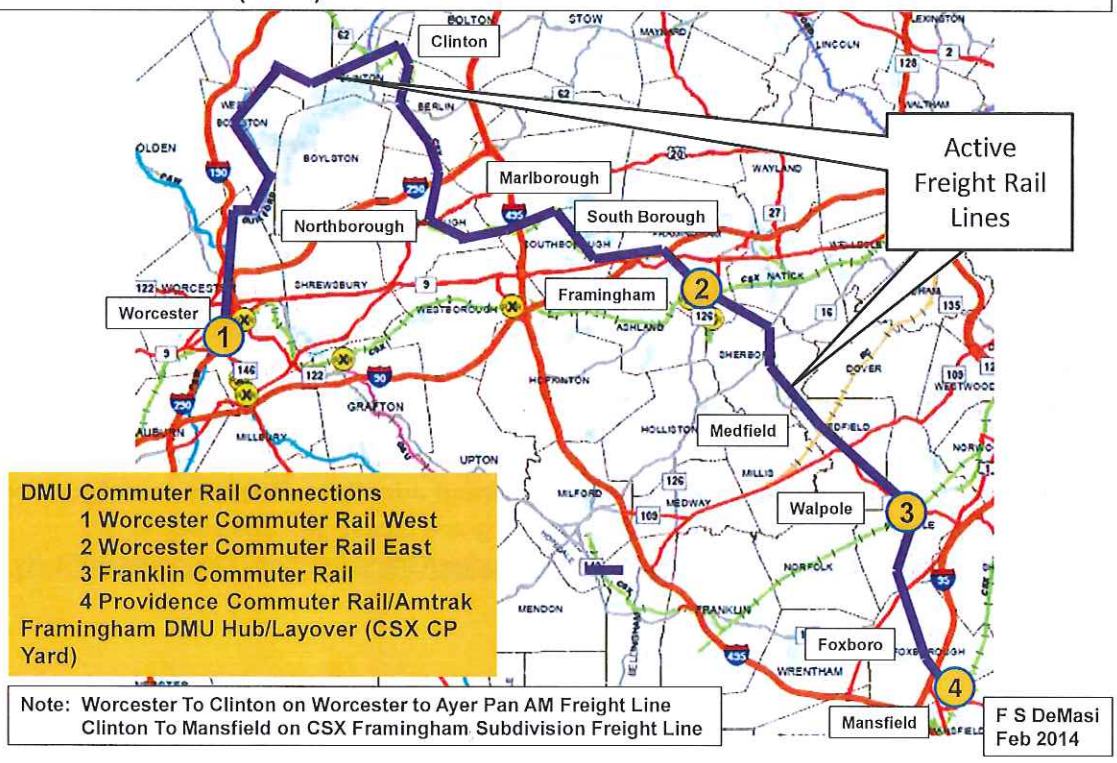
DMU Service Implementation Non-existing Commuter Rail Service at Present (Not on Indigo Line Described in 2014 MassDOT CIP)

1. **New Foxboro Commuter Rail:** Service via Manchester Walpole Boston. ***I Suggest we offer a broader alternative***: Manchester - Framingham – Marlborough providing a North South Connector to the NEC/Franklin/Worcester Commuter Rail. MBTA realized high demand for Foxboro service to Boston as well as Marlborough North Framingham (Framingham State) to Boston. We now have limited use of CSX Framingham Subdivision for Patriot games at Foxboro. Possible solution: Framingham as Hub for MetroWest I-495 Corridor service with Layover at CSX Auto Yard or CP Yard available land. See Foxboro Commuter Rail Study at:
http://www.mbta.com/uploadedfiles/About_the_T/T_Projects/T_Projects_List/Final%20Foxborough%20Commuter%20Rail%20Report%20(01-Sept-10)%20-%20REPORT%20ONLY.pdf

2. **Worcester/Clinton/Northborough/Framingham/Foxboro/Mansfield:** Newly-acquired passenger trackage rights on the Worcester Branch in concert with a Phase II extension of Northborough/I-290, southwest to Worcester from Clinton south to Framingham. Catchment area is 190/140 and 12/190 on the northern tip of Worcester and I-495 Corridor. A DMU service from the Worcester Ayer line to the Framingham Subdivision to Framingham provides reverse-commuting to Worcester from MetroWest I-495/I-290 Corridors. **See I-495 STUDY – I-290 to I-90: http://www.mapc.org/sites/default/files/I-495_Study_-_Final_Report_September_2009.pdf**

See: MetroWest/495 Development compact:
http://www.mass.gov/hed/economic/eohed/pro/planning/metrowest/495metrowestdevelopmentcompactplan.pdf

Worcester/Clinton/Northborough/Marlborough/Framingham/Foxboro/Mansfield Diesel Multi Unit (DMU)- Central MA I-495 Corridor Connector Service



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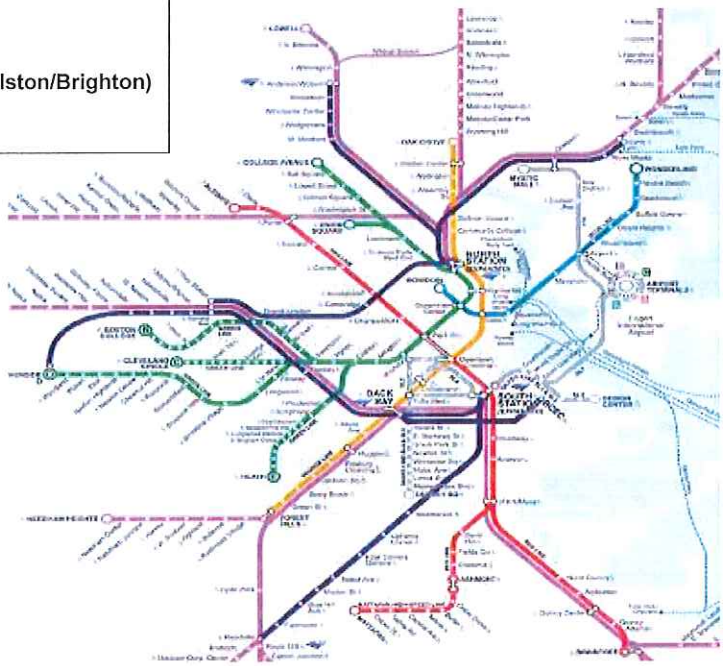
References for consideration

Boston MPO/MassDOT DMU Study: In order to maximize the use of the existing facilities of the MBTA transit system, MassDOT is studying the feasibility of using and the deploying Diesel Multiple Units (DMU) on up to six commuter rail corridors in the Boston metropolitan area. Because DMUs have the potential to provide cost-effective transit service to rail corridors, MassDOT is interested in studying the deployment of DMUs in other rail corridors in the Boston metropolitan area in addition to the Fairmount corridor. Ref: **http://www.ctps.org/Drupal/data/calendar/htmls/2013/MPO_1017_DMU_Study.html**

MBTA Indigo Line Stations
North Side:
Anderson Woburn
Lynn
South Side:
Riverside
West Station (Allston/Brighton)
Back Bay
Reedville



Description: Operate Express service from Outer Stations by using DMUs for inner segments (MBTA PMT 2004)

This project would implement new peak-period express trips on selected commuter rail lines. These Trips would stop at several stations near the outer ends of their routes and then run non-stop to Boston. Some of these would run in addition to present local trains covering the full route. Others would Replace full-route locals, with new short-turn local trains using DMUs serving the inner stations.

Capital Features: Estimates from 2004 PMT

A total of 15 new train sets would be needed in order to operate peak-period express service without elimination of other services. Capital Cost $255.6 million, Operating Cost $53,400 per weekday, Daily Ridership Increase on Mode 8,200/Net Increase in Daily Transit Ridership 3,000, Capital Cost per New Transit Rider $84,100/Operating Cost per New Transit Rider $17.60, Capital Cost/Travel Time Benefit $171,500 per hour/Operating Cost/Travel Time Benefit $35.60 per hour. ***Travel Time Savings 1,491 hours per weekday***

Assessment

This project would reduce trip times for passengers traveling to Boston from stations on outer segments of those commuter rail lines that now have track capacity for such added service. It would also reduce crowding on inner segments by diverting through riders from trains stopping at the inner stations. It would not increase the frequency of service at the inner stations, and would not necessarily increase frequency at the outer stations. Potential trip time reductions would be greatest on longer routes, such as the Fitchburg Line. In some cases where express service has been requested, such as on the Newburyport/Rockport Line between Beverly and Boston, present train frequency would permit express

service only if some service to stations closer to Boston were eliminated. Overall, the capital and operating costs per new rider for express service additions would be in the mid-ranges of such costs among commuter rail projects analyzed. The capital costs relative to air quality improvements would also be in the mid-range among commuter rail projects. The overall rating of this project is medium priority.

Current MBTA Commuter Rail and Transit Map

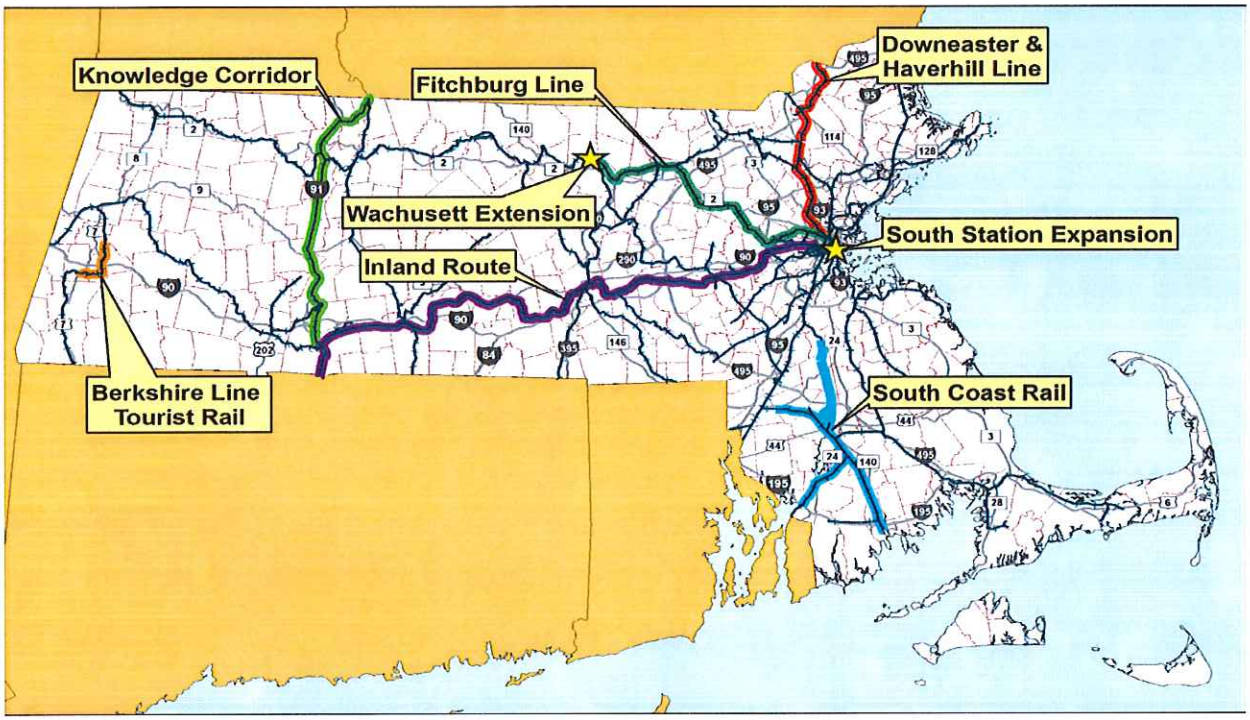
MassDOT Capital Plan DMU Summary

The Massachusetts Department of Transportation Draft 5-year Capital Plan proposes funding of $252 million for Bus and new Commuter Rail Diesel Multiple Unit service. MBTA commuter rail has 12 lines serving approximately 140,000 riders daily. Mid-day service on all lines is inadequate and high public demand exists for reverse commuting and off peak service. There is little connectivity between the commuter rail and rapid transit lines with a need for intermediate local service at higher frequencies and better connectivity to many inner neighborhoods including Allston-Brighton, Dorchester, Chelsea, and Lynn. The MBTA 2024 vision is to implement DMUs on upgrades already underway – such as the Fairmount Line in Dorchester and the new Boston Landing station planned for New Balance's headquarters in Brighton. Planning includes adding DMU service to Chelsea and Lynn on the Newburyport/Rockport line and to Medford, Winchester,

and Woburn on the Lowell line. A shuttle DMU service from Back Bay to the Convention Center is planned for an existing freight branch to be rehabilitated to accommodate multimodal rail service,

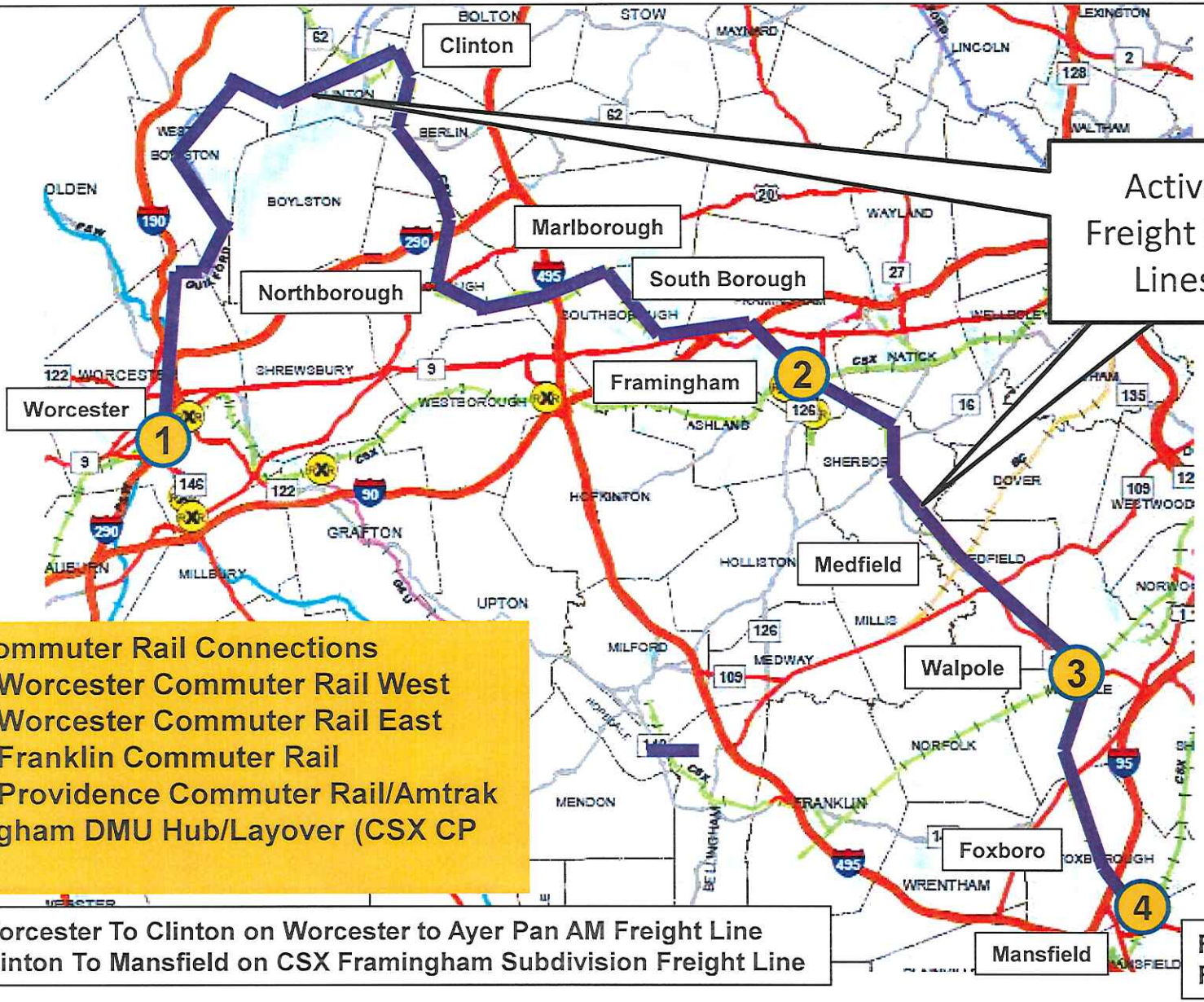
South side and MetroWest new interfaces are needed with a DMU service to the D-Line at Riverside Green Line Station and improvement of the Grand Junction freight connector from Riverside to North Station and Boston University via MIT. Conventional commuter rail equipment would provide service at the outer stations with peak hour trains running express through the new DMU served stations. Distant Stations would offer reduced travel times and the inner stations get higher frequency demanded by the higher density communities reducing road congestion and improving air quality.

Other projects that can be used for Information Mapping



Studies exist for these projects that could all be linked to show impact on each other and or competing Objectives/Conflicts/Mutual Benefits. All but two, Knowledge Corridor and Berkshire Line Tourist Rail impact North or south Station. Not Shown is Pittsfield MA/Norwalk CT/NY NY passenger rail connection.

Worcester/Clinton/Northborough/Marlborough/Framingham/Foxboro/Mansfield Diesel Multi Unit (DMU)- Central MA I-495 Corridor Connector Service



DMU Commuter Rail Connections
- 1 Worcester Commuter Rail West
- 2 Worcester Commuter Rail East
- 3 Franklin Commuter Rail
- 4 Providence Commuter Rail/Amtrak

Framingham DMU Hub/Layover (CSX CP Yard)

Note: Worcester To Clinton on Worcester to Ayer Pan AM Freight Line
Clinton To Mansfield on CSX Framingham Subdivision Freight Line

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Feb 2014

Auto Travel

Pavement and State of Good Repair

City/Town	Route	From	To
Brookfield	Fiskdale Road	Molasses Hill Road	Sturbridge Town Line
Millbury	Greenwood Street	McCracken Road	Elmwood Street
Paxton	Holden Road	Grove Street	Holden Town Line
Southbridge	Hamilton Street	Main Street Loop	Main Street Loop
Spencer	Medow Road	Old Main Street	Dewey Street
Spencer	Charlton Road	Maple Street	Charlton Town Line
Uxbridge	Hartford Avenue East	North Main Street	Granite Street
West Boylston	Laurel Street	Holden Town Line	Hosmer Street
Worcester	Greenwood Street	Blackstone River Road	Route 20
Worcester	Main Street	Chandler Street	Martin Luther King Jr. Boulevard

Freight (Rail and Trucking)

Traffic Monitoring: Heavy Vehicles in the Region

As part of ongoing traffic monitoring efforts, the volume and percentage of heavy vehicles on the region's primary NHS freight routes are periodically monitored. Automatic Traffic Recorder (ATR) machine collected counts, or "ground counts" obtained in the field, used to count daily traffic volumes, can be extrapolated to determine the percentage of heavy vehicle traffic. Further, these percentages can be broken down into the 13 vehicle classification categories established by FHWA. The results of this effort are summarized in Table IV-11, Vehicle Classification Observed on Designated & Potential NHS Primary Freight Routes Serving Intermodal Operations. Also, as part of ongoing Congestion Management Process (CMP) efforts, the percentage of heavy vehicles at intersection locations are determined through peak period Turning Movement Counts (TMCs). Nearly 300 intersections are periodically monitored throughout the planning region. In addition, heavy vehicle percentages have been determined on a number of collected major state numbered routes throughout the region as part of the "Corridor Profile" study series. Most recently, a Corridor Profile report was completed for Route 31 in the host communities of Holden, Paxton and Spencer.

TABLE IV-11
Vehicle Classification Observed On Designated And Potential NHS Connectors Serving Intermodal Operations

COUNT LOCATION & INTERMODAL SITE	COUNT DATE	VEHICLE TYPE/CLASS	DIRECTION NB/EB	DIRECTION SB/WB	TOTALS	RESULTING PERCENTAGES	TRUCK TOTAL	TRUCK PERCENT
Rt 49 south of Rt 9	10/26/2010	Passenger vehicles	2178	2934	5112	84.42%		
Spencer - *N.E. Automotive*		Single-unit trucks/buses	537	171	708	11.69%		
Gateway Industrial Park		Combination trucks	94	136	230	3.79%	943	15.57%
		Multi-trailer trucks	1	4	5	0.08%		
Rt 49 north of Rt 20	8/19/2014	Passenger vehicles	3177	2449	5626	79.45%		
Sturbridge - *N.E. Automotive*		Single-unit trucks/buses	539	443	982	13.87%		
Gateway Industrial Park		Combination trucks	237	235	472	6.67%	1455	20.50%
		Multi-trailer trucks	0	1	1	0.01%		
Connector Rd south of Rt 9	8/17/2010	Passenger vehicles	3784	2866	6650	89.95%		
Westborough - *CSX Intermodal*		Single-unit trucks/buses	200	173	373	5.05%		
Automotive, Bulk		Combination trucks	191	169	360	4.87%	743	10.05%
		Multi-trailer trucks	4	6	10	0.13%		
Flanders Rd east of Connector Rd	8/17/2010	Passenger vehicles	3967	4509	8476	88.57%		
Westborough - *CSX Intermodal*		Single-unit trucks/buses	442	245	687	7.18%		
Automotive, Bulk		Combination trucks	182	200	382	3.99%	1094	11.43%
		Multi-trailer trucks	14	11	25	0.26%		
Franklin St east of Grafton St	7/30/2014	Passenger vehicles	4376	4084	8460	93.10%		
Worcester - *CSX Intermodal*		Single-unit trucks/buses	220	234	454	5.00%		
TOFC, Bulk		Combination trucks	71	99	170	1.87%	627	6.90%
		Multi-trailer trucks	2	1	3	0.03%		
Blackstone River Rd south of Greenwood St	8/23/2012	Passenger vehicles	1760	1626	3386	92.72%		
		Single-unit trucks/buses	88	121	209	5.72%		
Worcester - *Prov & Worc RR*		Combination trucks	24	33	57	1.56%	266	7.28%
Intransit Container Inc.		Multi-trailer trucks	0	0	0	0.00%		
Containers, Chassis								
Southbridge St north of Cambridge St	8/28/2012	Passenger vehicles	5798	7018	12816	90.72%		
Worcester - *Prov & Worc RR*		Single-unit trucks/buses	464	560	1024	7.25%		
Intransit Container Inc.		Combination trucks	147	135	282	2.00%	1311	9.28%
Containers, Chassis		Multi-trailer trucks	3	2	5	0.04%		

Passenger vehicles consist of cars, light trucks, and motorcycles.
Single-unit trucks are trucks with 3-4 axles or dual wheels, on one frame.
Combination trucks have two units (for example, the typical 18-wheeler).
Multi-trailer trucks have three or more units (often called tandem trailers).

CSX

CSX is a major railroad serving the eastern US with a system that stretches from Massachusetts to Florida, out west to Chicago, and south along the Mississippi River to New Orleans. CSX operations in Massachusetts now feature full Phase II double stack container freight due to recent clearance increases.

CSX intermodal facilities directly serve Worcester and Westborough and the greater region through "last mile" distribution services by the trucking industry. CSX recently expanded and modernized the Worcester Intermodal Facility located along Franklin Street. The expansion of the Worcester yard represents an investment in excess of $100 million. The yard features an improved site drive at I-290 exit 14 on Grafton Street. The CSX Westborough intermodal yard provides transloading services for a range of chemicals and food manufacturing products.

CMRPC continues to monitor the progress of rail giant CSX, via in-the-field observations and periodic interaction with railroad officials. CSX seeks to improve service for both existing customers and potential future users of national rail freight.

East Brookfield & Spencer Railroad

The East Brookfield & Spencer Railroad is a switching railroad that serves the New England Automotive Gateway (NEAG) intermodal transload facility located in the namesake communities of East Brookfield and Spencer. Long distance deliveries to the site are made by CSX. CSX uses special railcars to bring finished vehicles, cars and trucks, manufactured in the American heartland to the NEAG.

At the site, the EB&S RR works to unload these railcars and ready them for the return trip to automotive plants. Final "last mile" delivery of the finished vehicles throughout the greater New England area is completed by a number of trucking companies that serve the NEAG site. The operator of the NEAG and owner of the EB&S RR has participated in the regional transportation planning process since the early 1990's.

Recently a project to expand on-site railroad tracks needed to unload and store railcars was constructed. The CMRPC staff monitored the expansion process. Further, the operator of the

NEAG also participated as a stakeholder in the compilation of the Route 31 Corridor Profile study, now complete.

Grafton & Upton Railroad

The Grafton & Upton Railroad is a shortline railroad that serves line side industry as well as undertaking substantial intermodal transload operations. Most switching and transloading activities occur at the G&U RR yards located in the host communities of North Grafton, West Upton and Hopedale. In Hopedale, the G&U RR operates adjacent to the Draper Mill complex, a target for potential future redevelopment.

At one time, revitalization of the G&U RR was considered unlikely. For this reason, the line was viewed as a potential rail-trail facility. This is no longer the case with increased rail freight activity along the length of the G&U RR line. The G&U RR has been working for a number of years to improve trackage and highway grade crossings. The railroad has also been recently involved in siting a controversial propane transload facility at the existing rail yard in North Grafton.

MassCentral Railroad

Shortline MassCentral Railroad serves customers along the Ware River line that goes from Palmer, MA, where it interchanges with both CSX and the New England Central Railroad, north to the Phoenix Plaza Industrial Park located in South Barre. Phoenix Plaza Industrial Park is located at the site of the former Barre Woolen Mill. Most of the over 20 miles of trackage operated by the MassCentral is owned by the Commonwealth of Massachusetts and overseen by MassDOT.

The planning staff had previously provided the MassCentral with a series of "Environmental Profile" maps of the South Barre village, site of Phoenix Plaza Industrial Park. These maps can be used as a decision-making tool when considering potential site alternations. Further, agency staff, in support of a request from MassCentral for track improvement funding through MassDOT, conducted an exercise to map all highway & water crossings along the MassCentral line between Palmer and South Barre.

North Brookfield Railroad-*Revitalization of a Dormant Line*

The North Brookfield Railroad has been dormant since the early 1970's but was never abandoned. The line is actually owned by the namesake host community of North Brookfield,

The railroad has indicated the need for mainline bridge improvements in the Blackstone Valley. Five bridges, all in excess of 100 years of age, are a "missing link" in the transcontinental network of railroads between the Pacific Northwest and the deep water ports of Rhode lsland. These bridges are worn due to years of constant use and repetitive loading. They cannot be effectively maintained due to archaic assembly methods no longer used or supported.

The planning staff has also provided limited assistance with two P&W RR applications for improvement funding through MassDOT's Industrial Rail Access Program (IRAP) grant program. One focused on the replacement of a small bridge structure serving an active set of switching tracks worn after decades of service. The other IRAP application, pending at the time of writing, seeks the rehabilitation of an approximately 400 foot "wye" track and three switches connecting P&W's Norwich Branch and Main Line track, located at opposite sides of P&W's Southbridge Street yard. The project will facilitate a head-on move of unit trains from the Norwich branch to the main line, alleviating a freight rail bottleneck for unit trains as well as the hundreds of other railcars moving through P&W's yard facility on a daily basis.
CMRPC has hosted the P&W Railroad's Annual Shareholders Meeting for a number of years. This is characteristic of the relationship maintained between the planning agency and the regional rail freight carrier.

Intransit Container Incorporated (ICI)

Intransit Container Incorporated (ICI), while not a freight railroad provider, is New England's leading double-stack terminal operator and intermodal service provider. Routing international containers via the port of Worcester assures supply chain integrity while reducing overall costs. ICI provides direct daily double-stack rail service between West Coast ports and Worcester along with daily services to and from the Port of NY&NJ. The Corridor Rail Shuttle connects New England importers and exporters to the Port of NY&NJ, the largest East Coast port, allowing New England companies to effectively complete in global markets.

More than a rail terminal operator, ICI is a fully integrated intermodal service provider. Augmenting rail services, ICI Trucking is a premium quality, competitively priced trucking company serving all of New England along with the Ports of NY&NJ and Philadelphia. In addition, ICI operates a neutral chassis pool, a trans-load warehouse, a full service maintenance shop, a Foreign Trade Zone (FTZ) and a 365KSF public warehouse. ICI offers its customers a "one-stop shop" with superior service.

and to this day the local board of Selectmen acts as the railroad's board of directors. The line runs from an interchange with CSX in the adjacent community of East Brookfield north to the town center of North Brookfield. Revitalization of this line would require reestablishing an at-grade highway-railroad crossing at the intersection of Route 9 with North Brookfield Road.

At this time, private efforts to revitalize the dormant line continue, now ongoing for a number of years. The opportunity for line side, rail-served industry is considered sizable. CMRPC staff has assisted in the revitalization effort, producing a series of "Environmental Profile" maps of the entire line for use by the North Brookfield Board of Selectmen and the proponent seeking to return freight service to the line. These maps can be used as a decision-making tool when considering potential site alternations.

Pan Am Railways

Pan Am Railways is a regional rail freight carrier serving northern Massachusetts and other locations, notably parts of the state of Maine. Recently, through a cooperative venture with eastern rail giant Norfolk Southern (NS), the "Pan Am Southern Patriot Corridor" was formed. The corridor runs from Mechanicville, New York to Ayer, MA. Pan Am Southern (PAS) interchanges traffic with the Providence & Worcester Railroad in Gardner, MA in the Montachusett planning region. In turn, PAS interchanges with Norfolk Southern in New York State.

NS, similar to CSX, maintains a rail network serving the eastern US from the Atlantic Ocean to the Mississippi River. On the national level, NS and CSX compete toe-to-toe in order to serve the major customers of rail freight. Accordingly, the greater Central Massachusetts region has direct access to both major eastern carriers, which often leads to competitive shipping rates. It should also be mentioned that improvements are underway at the Gardner freight yard which will lead to improved interchange between P&W RR and PAS.

Providence & Worcester Railroad

While the planning staff interacts with the entire regional rail freight community, perhaps the most interaction occurs with the administration of the Providence & Worcester Railroad. The P&W RR is headquartered in the city of Worcester and maintains the railroad line between the two namesake cities. The P&W RR's reach extends from the ocean ports of Rhode Island to transloading operations in Fresh Pond, New York. Notably, the P&W RR provides the rail freight service to intermodal transloading associate Intransit Container Incorporated (ICI). ICI is a carrier of international containerized freight and maintains a customs bonded inland port in the city of Worcester.

Regional Inventory of Public At-Grade Highway/Rail Crossings

including FRA "Accident Prediction Value"

Community	Street	RR	Division	Subdivision	Crossing ID	AADT	AADT Year	% Trucks	Prediction Value	ACPD Ranking	ACPD Date
AUBURN	ELM ST	PW	NORTHEASTERN	NEW ENGLAND	501860E	4,000	2002	1.0	0.013495	16	11/24/10
AUBURN	SWORD ST	PW	NORTHEASTERN	NEW ENGLAND	501866V	4,700	2002	7.0	0.012821	19	11/24/10
AUBURN	CENTRAL ST	PW	NORTHEASTERN	NEW ENGLAND	501863A	1,800	2003	7.0	0.009312	36	11/24/10
AUBURN	SOUTH ST	PW	NORTHEASTERN	NEW ENGLAND	501859K	1,200	2002	7.0	0.008081	49	11/24/10
BARRE	NO. BROOKFIELD RD	MCER	NORTHEASTERN	NEW ENG. DIV.	526028W	2,700	2002	15.0	0.003538	88	11/24/10
BERLIN	RANDALL RD	CSX	ALBANY	FITCHBURG	547143L	1,900	2001	6.0	0.007003	57	11/24/10
BERLIN	JONES RD	CSX	ALBANY	FITCHBURG	547139W	1,100	2001	5.0	0.005734	67	11/24/10
BERLIN	LINDEN ST	CSX	ALBANY	FITCHBURG	547140R	990	2001	5.0	0.005514	71	11/24/10
BERLIN	CROSBY RD	CSX	ALBANY	FITCHBURG	547138P	230	2001	5.0	0.003163	91	11/24/10
BERLIN	WEST ST	CSX	ALBANY	FITCHBURG	547141X	8,000	2001	6.0	0.000114	104	11/24/10
DUDLEY	WEST DUDLEY RD	PW	NORTHEASTERN	NEW ENGLAND	501830M	200	1970	5.0	0.000195	102	12/19/03
DUDLEY	MILL RD	PW	NORTHEASTERN	NEW ENGLAND	501831U	380	2002	5.0	0.000114	104	11/24/10
GRAFTON	CARROLL RD	GU			861462S	2,100	2002	3.0	0.014241	13	11/24/10
GRAFTON	WATERVILLE STR	GU			861469P	9,300	2002	3.0	0.012777	20	11/24/10
GRAFTON	UPTON RD	GU			861459J	8,700	2002	4.0	0.012506	21	11/24/10
GRAFTON	WESTBORO RD	GU			861470J	3,500	2002	3.0	0.012348	22	11/24/10
GRAFTON	SNOW RD	GU			861465M	1,200	2003	3.0	0.011921	23	11/24/10
GRAFTON	PLEASANT ST.	PW	NORTHEASTERN	NEW ENGLAND	871909F	3,300	2003	5.0	0.011427	28	11/24/10
GRAFTON	NORTH ST.	GU			861460D	5,300	2002	3.0	0.010622	32	11/24/10
GRAFTON	FOLLETTE ST	PW	NORTHEASTERN	NEW ENGLAND	871907S	880	2003	1.0	0.008895	39	11/24/10
GRAFTON	SIBLEY RD	GU			861458C	450	2002	3.0	0.008633	41	11/24/10
GRAFTON	EAST ST.	GU			861468H	2,800	2002	3.0	0.008532	42	11/24/10
GRAFTON	OLD UPTON RD	GU			861455G	390	2002	3.0	0.008228	47	11/24/10
GRAFTON	RAY ST.	GU			861467B	390	2002	3.0	0.008228	47	11/24/10
GRAFTON	BOULEVARD AVE	GU			861461K	2,200	2002	3.0	0.007836	53	11/24/10
GRAFTON	BROWNS RD	GU			861457V	200	1984	3.0	0.003729	85	11/24/10
HARDWICK	SMITH'S XING	MCER	NORTHEASTERN	NEW ENGLAND	526034A	2,700	2004	20.0	0.008424	44	11/24/10
HARDWICK	PAPERMILL/RTE32	MCER	NORTHEASTERN	NEW ENGLAND	526031E	2,400	2006	20.0	0.008081	49	11/24/10

HARDWICK	BRIDGE ST	MCER	NORTHEASTERN	NEW ENGLAND	526039J	590	2001	5.0	0.004836	76	11/24/10
HARDWICK	SHUNPIKE RD	MCER	NORTHEASTERN	NEW ENGLAND	526032L	370	2001	10.0	0.004051	82	11/24/10
HARDWICK	RIVER RUN	MCER	NORTHEASTERN	NEW ENGLAND	526036N	240	2001	5.0	0.003431	89	11/24/10
HARDWICK	CREAMERY XING	MCER	NORTHEASTERN	NEW ENGLAND	526035G	160	2002	5.0	0.002931	92	11/24/10
HARDWICK	GROVE ST	MCER	MASS CENTRAL		526038C	100	1970	5.0	0.000841	96	3/16/09
HARDWICK	WEST RD	MCER	BOSTON & MAINE	US 5 MAP 60	052941N	415	1970	4.0	0.000428	97	10/3/00
HARDWICK	RAILRD LANE	MCER	NORTHEASTERN	NEW ENGLAND	526037V	6	2001	20.0	0.000394	98	11/24/10
HARDWICK	CREAMERY RD	MCER	BOSTON & MAINE	US 5 MAP 62	052944J	200	1970	4.0	0.000236	99	10/3/00
HOLDEN	PLEASANT ST	PW	NORTHEASTERN	NEW ENGLAND	871874G	1,000	2002	4.0	0.008243	46	11/24/10
HOLDEN	BAILEY RD	PW	NORTHEASTERN	NEW ENGLAND	871876V	2,400	2000	4.0	0.008081	49	11/24/10
HOLDEN	INDUSTRIAL DRIVE	PW	NORTHEASTERN	NEW ENGLAND	871891X	2,200	2003	5.0	0.006171	62	11/24/10
HOLDEN	QUINAPOXET ST	PW	NORTHEASTERN	NEW ENGLAND	871871L	3,200	2003	5.0	0.005647	70	11/24/10
HOLDEN	PRINCETON ST	PW	NORTHEASTERN	NEW ENGLAND	871870E	410	2003	5.0	0.003268	90	11/24/10
HOLDEN	SUNNYSIDE ST	PW	NORTHEASTERN	NEW ENGLAND	871872T	70	2000	4.0	0.002119	94	11/24/10
HOPEDALE	MELLEN ST	MBTA	NORTHEASTERN	NEW ENGLAND	546905K	120	2002	4.0	0.004962	74	11/24/10
HOPEDALE	HOWARD ST	MBTA	NORTHEASTERN	NEW ENGLAND	546906S	50	2002	2.0	0.003645	87	11/24/10
HOPEDALE	GREEN STR	GU			861431T	500	1979	3.0	0.000206	100	6/21/01
HOPEDALE	MENDON STR	GU			861433G	6,900	1984	3.0	0.000206	100	6/21/01
MILLBURY	S.MAIN ST	PW	NORTHEASTERN	NEW ENGLAND	871901B	3,700	2003	5.0	0.010460	33	11/24/10
MILLBURY	CURVE ST.	PW	NORTHEASTERN	NEW ENGLAND	871902H	520	2003	5.0	0.005973	63	11/24/10
MILLBURY	RICE RD	PW	NORTHEASTERN	NEW ENGLAND	871903P	470	2003	5.0	0.005754	66	11/24/10
MILLBURY	MCCRACKEN RD	PW	NORTHEASTERN	NEW ENGLAND	871898V	80	2003	4.0	0.003674	86	11/24/10
NORTHBORO	MAIN ST.	CSX	ALBANY	FITCHBURG	547132Y	18,500	2001	7.0	0.015356	9	11/24/10
NORTHBORO	SUMMER ST.	CSX	ALBANY	FITCHBURG	547131S	2,400	2001	6.0	0.007616	54	11/24/10
NORTHBORO	COLBURN ST.	CSX	ALBANY	FITCHBURG	547135U	2,300	2001	6.0	0.007501	56	11/24/10
NORTHBORO	PIERCE ST.	CSX	ALBANY	FITCHBURG	547133F	1,600	2001	6.0	0.006580	59	11/24/10
NORTHBORO	BRIGHAM ST	CSX	ALBANY	FITCHBURG	547129R	1,200	2001	6.0	0.005921	64	11/24/10
NORTHBORO	COLLINS RD	CSX	ALBANY	FITCHBURG	547128J	1,100	2001	6.0	0.005734	67	11/24/10
NORTHBORO	SCHOOL ST.	CSX	ALBANY	FITCHBURG	547130K	1,100	2001	6.0	0.005734	67	11/24/10
NORTHBRIDGE	SUTTON ST	PW	NORTHEASTERN	NEW ENGLAND	871912N	6,600	2003	5.0	0.014270	12	11/24/10
NORTHBRIDGE	UNION ST	PW	NORTHEASTERN	NEW ENGLAND	861580U	700	2003	1.0	0.008315	45	11/24/10
NORTHBRIDGE	ELSTON AVE.	PW	NORTHEASTERN	NEW ENGLAND	871913V	260	2003	5.0	0.004611	78	11/24/10
OXFORD	SUTTON AVE.	PW	NORTHEASTERN	NEW ENGLAND	501847R	20,100	2002	6.0	0.024886	1	11/24/10

OXFORD	FEDERALL HILL RD.	PW	NORTHEASTERN	NEW ENGLAND	501851F	2,900	2003	6.0	0.010948	30	11/24/10
OXFORD	DEPOT RD	PW	NORTHEASTERN	NEW ENGLAND	501854B	2,300	2001	7.0	0.010753	31	11/24/10
OXFORD	DANA RD	PW	NORTHEASTERN	NEW ENGLAND	501850Y	1,500	2001	6.0	0.009298	37	11/24/10
OXFORD	MILLBURY RD	PW	NORTHEASTERN	NEW ENGLAND	501853U	1,400	2003	6.0	0.008532	42	11/24/10
OXFORD	HOLBROOK RD	PW	NORTHEASTERN	NEW ENGLAND	501843N	930	2001	7.0	0.007864	52	11/24/10
OXFORD	GEORGE ST	PW	NORTHEASTERN	NEW ENGLAND	501844V	530	2001	4.0	0.006421	60	11/24/10
OXFORD	WATER ST	PW	NORTHEASTERN	NEW ENGLAND	501848X	620	2003	4.0	0.006372	61	11/24/10
OXFORD	HALL RD	PW	NORTHEASTERN	NEW ENGLAND	501849E	150	2001	4.0	0.004003	84	11/24/10
PRINCETON	BROOKS STATION RD	PW	NORTHEASTERN	NEW ENGLAND	871867W	1,200	2003	5.0	0.004926	75	11/24/10
PRINCETON	ROUTE 62	PW	NORTHEASTERN	NEW ENGLAND	871862M	1,200	2003	5.0	0.004297	80	11/24/10
PRINCETON	BALL HILL RD	PW	NORTHEASTERN	NEW ENGLAND	871866P	770	2003	5.0	0.004165	81	11/24/10
PRINCETON	RALPH RD	PW	NORTHEASTERN	NEW ENGLAND	871863U	290	2003	5.0	0.002875	93	11/24/10
PRINCETON	OLD COLONY RD	PW	NORTHEASTERN	NEW ENGLAND	871861F	20	2003	1.0	0.001866	95	11/24/10
SUTTON	BLACKSTON RD.	PW	NORTHEASTERN	NEW ENGLAND	871906K	180	2003	5.0	0.004009	83	11/24/10
UPTON	MAPLE AVE	GU			861449D	8,700	2002	3.0	0.021770	2	11/24/10
UPTON	PLEASANT ST.	GU			861448W	6,200	2002	3.0	0.019754	3	11/24/10
UPTON	WILLIAMS ST.	GU			861453T	5,000	2002	3.0	0.018547	4	11/24/10
UPTON	MENDON ST.	GU			861447P	4,600	2002	3.0	0.018094	6	11/24/10
UPTON	GROVE ST	GU			861445B	2,500	2002	3.0	0.015035	10	11/24/10
UPTON	CHESTNUT ST	GU			861443M	1,200	2002	3.0	0.011921	23	11/24/10
UPTON	PLAIN ST.	GU			861446H	610	2002	3.0	0.009555	35	11/24/10
UPTON	HARTFORD AVE	GU			861451E	490	2002	3.0	0.008883	40	11/24/10
UPTON	GLEN AVE	GU			861452L	240	2002	3.0	0.006978	58	11/24/10
UXBRIDGE	HARTFORD RD	PW	NORTHEASTERN	NEW ENGLAND	861578T	7,800	2002	6.0	0.015462	8	11/24/10
WEBSTER	N. MAIN ST.	PW	NORTHEASTERN	NEW ENGLAND	501841A	6,300	2003	5.0	0.014065	15	11/24/10
WEBSTER	MAIN ST	PW	NORTHEASTERN	NEW ENGLAND	501838S	19,500	2001	7.0	0.013409	17	11/24/10
WEBSTER	HILL ST	PW	NORTHEASTERN	NEW ENGLAND	501837K	3,300	2001	7.0	0.009035	38	11/24/10
WEBSTER	U PERRYVILLE RD	PW	NORTHEASTERN	NEW ENGLAND	501836D	830	2001	7.0	0.005495	72	11/24/10
WEST BOYLSTON	TEMPLE ST	BM	BOSTON & MAINE	US-6 MAP 8	053838E	7,900	2002	4.0	0.014237	14	11/24/10
WEST BOYLSTON	SHREWSBURY ST	BM	BOSTON & MAINE	US-6 MAP 6	053842U	3,300	2003	4.0	0.011411	29	11/24/10
WEST BOYLSTON	PRESCOTT ST	BM	BOSTON & MAINE	US-6 MAP 12	053837X	290	2002	4.0	0.005809	65	11/24/10
WORCESTER	THOMAS ST	PW	NORTHEASTERN	US-6 MAP-1	844556Y	4,800	2000	7.0	0.018388	5	11/24/10
WORCESTER	MILLBURY ST SO.	PW	NORTHEASTERN	NEW ENGLAND	871893L	7,600	2000	5.0	0.017159	7	11/24/10

WORCESTER	HOPE AVE	PW	NORTHEASTERN	NEW ENGLAND	501869R	9,000	2000	8.0	0.014494	11	11/24/10
WORCESTER	BURNCOAT ST	BM	BOSTON & MAINE	US-6 MAP 5	844540C	3,600	2002	7.0	0.013068	18	11/24/10
WORCESTER	BRATTLE ST.	PW	NORTHEASTERN	NEW ENGLAND	871884M	11,300	2000	5.0	0.011672	25	11/24/10
WORCESTER	HOLDEN ST.	PW	NORTHEASTERN	NEW ENGLAND	871885U	11,300	2000	5.0	0.011672	25	11/24/10
WORCESTER	NEW BOND ST.	BM	BOSTON & MAINE	US-6 MAP 4	844543X	2,200	2003	7.0	0.011641	27	11/24/10
WORCESTER	SCHOOL ST	PW	NORTHEASTERN	US-6 MAP-1	844554K	1,300	2002	7.0	0.009854	34	11/24/10
WORCESTER	RIVERDALE ST	PW	NORTHEASTERN	NEW ENGLAND	871915J	560	2003	2.0	0.007584	55	11/24/10
WORCESTER	JACKSON ST	PW			501875U	500	1970	6.0	0.005046	73	12/19/03
WORCESTER	GARDEN ST	PW	NORTHEASTERN	VS-6 MAP 2	844549N	140	2003	7.0	0.004688	77	11/24/10
WORCESTER	TRACY PLACE	PW	NORTHEASTERN	NEW ENGLAND	501868J	190	2000	6.0	0.004380	79	11/24/10
WORCESTER	GARDEN ST	PW		US 6 MAP 2	844550H	420	2000	7.0	0.000161	103	12/19/03
WORCESTER	PRESCOTT ST	PW	NORTHEASTERN	VS 6 MAP 2	844548G	2,100	2003	7.0	0.000094	106	11/24/10

Airport

Worcester Regional Airport

Characteristics and Inventory

Worcester Regional Airport is located approximately four miles west of the downtown area on the Worcester/Leicester town line. The airport is situated on a 2.04 square mile parcel of land on Airport Hill at an elevation of 1,009 feet above sea level. The National Plan of Integrated Airport Systems (NPIAS) has categorized Worcester Regional Airport as a "Primary Commercial Service" airport, designed to accommodate aircraft in the "Transport Short Haul" service. "Transport" airports, as opposed to "Utility" airports, are designed to accommodate the larger, heavier aircraft operated by commercial airlines as well as business and corporate jets.

The largest commercial aircraft that can be accommodated at Worcester Regional Airport is the Boeing 757 that has a capacity of 190 passengers. For an airport of Worcester's size, a Boeing 737, with a capacity of 100 to 130 passengers, is more typical. Long haul, intercontinental jumbo jets, which fly over 1500 miles, could not operate from Worcester, mainly due to short runway lengths. Any large scale physical expansion of the airport is precluded by limited land area, steep topography, and wetlands.

In 2008, it was proposed that Massport purchase the airport from the City, and this was accomplished as part of a state transportation reorganization plan passed by the legislature. Worcester Regional Airport's current economic impact includes the employment of 400 people, with a payroll of $14 million. It contributes over $50 million to the local economy.

Air Carrier Operations

Looking back over recent history, passenger traffic, totaling 49,727 in 1999, grew to 106,145 in 2000, but a shrinking economy in 2001 topped by the infamous events of September of that year combined to reduce traffic from an expected redoubling down to 130,566. 2002 saw enplanements cut in half, and in the years 2003-2005 there were fewer than 5,000 annually, as scheduled service was totally lost in early 2003. Allegiant Airlines was responsible for a jump back to almost 15,000 in 2006; after its departure there were essentially no commercial enplanements until 2008.

In November of 2008, Direct Air began limited service from Worcester, ending a two-year drought with respect to local scheduled commercial passenger service. The year 2011 saw enplanements rise to more than 50,000. However, in March 2012, Direct Air suspended operations from Worcester, and shortly thereafter filed for Chapter 7 bankruptcy. With the end of Direct Air service, enplanements dropped to 10,000 in 2012 and 8,000 in 2013.

In April of 2013, national carrier JetBlue announced that they would begin two daily flights from Worcester to Florida destinations beginning in November. While some questioned whether new customers would be generated (as opposed to drawing from existing flights to/from Boston) and whether profitable levels of pricing could be sustained after initial startup support, Massport and others have been working to increase service and to provide more destinations, and JetBlue has been somewhat successful to this point. New leadership and the installation of baggage fees and smaller seat spacing came to JetBlue late in 2014 with corporate and market impacts yet to be determined. Company officials called for more local pressure to encourage FAA improvements (specifically, an improved landing system) for the airport to help build and strengthen currently limited service. JetBlue's regularly scheduled flights continued in late 2014, but at time of writing no additional air service routes or airlines were anticipated locally in the near future.

General Aviation Operations

General aviation accounts for most of the aircraft landings and departures at Worcester Regional Airport. General aviation includes not only business and corporate flights, but also medical, air taxi, charter, flight training, and personal and recreational trips. General aviation is an important transportation mode for the Worcester business community.

A rising level of general aviation operations supports MAC's classification of Worcester Regional Airport as a regional facility vital to the business and economic needs of central Massachusetts. According to the MAC's *Business Benefits of General Aviation Access,* over 25% of all employers in the Worcester area utilize the airport at least occasionally. The Worcester Regional Chamber of Commerce has noted that the airport is one of the major reasons companies cite for locating in Worcester's Biotechnology Park at Belmont and Plantation Streets, as air transportation is critical for maintaining competitiveness in the time-sensitive biotechnical market. A general aviation airport is also important to electronics manufacturers for the delivery and receipt of supplies as well as for the transportation of real estate business staff and clients. In 2013 general aviation operations unexpectedly dropped by 20%. Local civil flights were down by 30%. Ground was broken by Rectrix Aviation to add office and hangar space to better support private/corporate air and maintenance services.

CHAPTER V

Summary of Needs and Analysis

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CHAPTER VI

Financial Plan

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